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Original Article

An Estimation of Nd: YAG Laser Capsulotomy Energy Level for Treating the Posterior Capsule Opacification

Humera Zafar and Hamid Mahmood

Objective: The objective of this study is to estimate the Nd: YAG laser capsulotomy energy level in milli joules (mJ) required to produce a clear visual axis in patients with posterior capsule opacification (PCO) in the Pakistani population.

Material and Methods: 138 eyes of the patients who were operated for cataract by routine extracapsular cataract extraction ECCE or Phaco emulisification with intraocular lens implant were included in the study. All had posterior capsule opacification and were treated with Nd;YAG capsulotomy in the Department of Ophthalmology, Sir Ganga Ram Hospital Hospital, Lahore from 1st January to 31st December 2011.

Results: Out of 138 eyes who were treated for PCO with Nd: yag laser the maximum energy required was in the range of 1.2 4.0 mJ in 92.1% of the eyes and the no of shots were < 40 in 88.5 % of the patients eye which is considered to be a safe range thereby minimizing the complications rate.

Conclusion: The Nd: YAG laser treatment is an effective technique to improve the hindered vision by PCO. It is not free from complications, so it is advised to be conscious of the extra damage to ocular tissues following Nd: YAG laser capsulotomy. It is also suggested that energy level should be kept to a minimum level to avoid severe complications.

Keywords: Posterior capsule opacification, visual axis, Nd:YAG laser capsulotomy, energy level.

Introduction

Posterior capsule opacification (PCO) is the most common visually disabling consequence of modern cataract surgery and has important medical, social and economic implications.[1] Expectations of patients receiving modern cataract surgery are becoming similar to patients with refractive surgery; they expect almost perfect result, often emetropia. The reported incidence of PCO varies widely. Analysis of multiple reports has found the visually significant PCO rate overall to be approximately 28% at 5 years.[2] PCO reduces visual acuity, contrast sensitivity and causes uniocular diplopia. It also decreases field of view in therapeutic and diagnostic procedures.[3-5]

Sundelin and Sjostrand have defined visually significant PCO as a decrease in post-operative best corrected visual acuity by two Snellen lines.[6] At present, the most effective treatment of PCO is Nd:YAG laser capsulotomy. The procedure involves clearing of the visual axis by creating a central opening in the opacified posterior capsule[7] by focusing a Nd:YAG laser pulse, with energy of few millijoules and duration of a few nanoseconds, just behind the posterior capsule.

The literature search reviled that a number of studies had been done on the complications of the Nd: yag laser capsulotomy post treatment but estimated energy levels which are safe for the patients has a very limited publication. This study was designed to estimate the safe range of energy level to treat the visual disabling PCO in our setup.

Materials and Methods

A total of 138 patients who were operated for cataract by routine ECCE or phaco emulisification with intraocular lens implant presenting to Department of Ophthalmology, Sir Ganga Ram Hospital Hospital, Lahore from January 2011 to December 2011, with posterior capsule opacification. A convenient sampling technique was used. All patients with posterior capsule opacification after cataract surgery, with more than six months post op were included in the study. Exclusion criteria were a history of previous intraocular surgery or laser treatment, diabetes mellitus requiring medical control, glaucoma, previous uveitis, or any posterior segment pathology and patient with the corneal opacity were excluded from the study .

The extent of PCO requiring laser capsulotomy was determined clinically. After thorough history, all patients were evaluated clinically. A record of VA (Snellen's) was maintained , along with slit lamp examination, applanation tonometry (Goldman's) was carried out. Fundoscopy was performed to rule out any retinal problem hampering the visual disability. The type and extent of PCO was carefully noted after mild pupillary dilation. Topical anesthetic was instilled in the ye to be treated. Abraham yag capsulotomy lens was used with a coupling agent.

The red 4 point Diode laser beam was used for accurate aiming and focusing of the invisible therapeutic beam using Lightmed Yag Laser machine. The parameters of laser system were adjusted accordingly to the need of patients depending upon the type and extent of PCO. As capsulotomy was done for optical purpose its size was restricted to 2 3 mm in diameter using spiral technique. After laser capsulotomy, the patients were rest given for 1 hour. Post laser evaluation was carried out. Topical fluorometholone (FML eye drops) was advised four times daily. The intraocular pressure (IOP) was measured after one hour of the procedure, in cases where it was raised then topical beta-blocker was advised and monitored accordingly. A record of energy required to produce the optimum capsulotomy size and the number of pulse shots was maintained. The data was analysed with IBM SPSS version 20.

Results

A total no of 138 patients were included in the study who were treated at Sir Ganga Ram Hospital, Lahore from 1 January to 31 December 2011 with the posterior capsule opacification by the Nd: yag laser capsulotomy technique.The age range was 20 90 years with a mean of 57.16 SD ± 13.20 (Table 1), out of which 83 were male and 55 were female patients (Table 2), with a predilection for left eye 73 (52.5%) and right eye 66 (47.5 %).(Table 3). The visual acuity as recorded by Snellen's chart was PL (perception of light) in 2 (1.4%), HM (hand movement) in 7 (5.0%), CF (counting fingers) in 34 (24.5%), 6/60 vision in 39 (32.2%), 6/36 in 18 (12.9%), 6/24 in 12 (8.6), 6/18 in 12 (8.6), 6/12 in 14 (10.8 %) patients (Table 4). The energy utilized to clear the visual axis by the Nd; YAG laser was measured in milliJoules with a mean of 2.50 SD± 1.66 and range of 1.2 9.0 mJ was used (Table 5). The range of pulse shots was 2 100 with a mean of 25.01 SD ± 24.38 (Table 6). The two extreme ages i.e the 20 year old patient with visual acuity 6/24 required 1.6mJ and 21 shots to clear the visual axis, whereas the 90 years old patient with visual acuity CF required 1.9 mJ of energy and 14 shots.

Table-1: Age distribution n=138.

Age in Years	Number	Percentage
20 - 30	07	5.7
31 - 40	10	7.2
51 - 50	36	25.9
51 - 60	38	27.4
61 - 70	36	25.9
71 - 80	10	7.2
81 - 00	01	0.7
Total	138	100

Mean 57.16 SD ± 13.20 / Range 20 90 years

Table-2: Sex distribution n=138.

Gender	Number	Percentage
Female	55	39.6
Male	83	60.4
51 - 50	138	100

Table-3: Eye n=138.

Gender	Number	Percentage
Right	66	47.5
Left	72	52.5
Total	138	100

Table-4: Visual Acuity n=138.

Visual Acuity	Number	Percentage
PL	02	1.4
HM	07	5.0
CF	34	24.5
6/60	39	32.2
6/36	18	12.9
6/24	12	8.6
6/18	12	8.6
6/12	15	10.8
Total	138	100

Table-5: Nd: YAG laser Energy in mJ n=138.

Energy in mJ	Number	Percentage
1.2 - 2.0	63	46.1
2.1 - 3.0	50	35.9
3.1 - 4.0	14	10.1
4.1 - 5.0	4	2.8
5.1 - 6.0	3	2.2
61 - 7.0	0	0
7.1 - 8.0	4	0
8.1 - 9.0	4	2.9
Total	138	100

Table-6: Number of shots n=138.

Pulse shots	Number	Percentage
1 - 20	75	54.2
21 - 40	49	34.3
41 - 60	11	7.8
61 - 80	01	0.9
81 - 100	02	1.8
Total	138	100

Mean 25.01 SD ± 24.38 / Range 2 100 pulse shots

Discussion

Opacification of the capsule is described most commonly in terms of lens epithelial cell growth that forms pearls or fibrosis. However, there are many other mechanisms through which the posterior capsule may be affected.[8] Lens remnants may become trapped, imbibe water, and appear fluffy white. Mechanical distortion of the bag through folds or tears may cause irregularities in posterior capsule transparency. Proteins and white blood cells from posterior inflammation may deposit on the posterior capsule, as may red blood cells and pigmented cells from surgical trauma i.e during Extra capsular cataract extraction or phacoemulsification.[8] Opacification of the posterior capsule can lead to clinically significant reduction in visual acuity, impaired contrast sensitivity, glare disability, and monocular diplopia which is very annoying for patient hindering their clear vision.[9,10] Since the introduction of refined techniques of extracapsular cataract extraction and popularity of the phacoemulsification, opacification of the posterior capsule has become the commonest cause of postoperative reduction in vision following cataract removal.[11]

The Neodymium-YAG laser has become popular non-invasive technique of creating a posterior capsulotomy in both aphakic and pseudophakic eyes. Its safety and efficacy can be argued but it has established its place as a standard treatment for PCO replacing surgical capsulotomy.[12,15]

The procedure involves clearing of the visual axis by creating a central opening in the opacified posterior capsule by focusing a Nd:YAG laser pulse, with energy of few millijoules and duration of a few nanoseconds, just behind the posterior capsule. During a posterior capsulotomy, the laser breaks the capsule by creating a pressure wave on the anterior vitreal side of the capsule. The pressure wave is a result of a process created by infrared light of 1,064 nanometers (nm) amplified and focused so that electrons are ripped away from nuclei, forming energy plasma and corresponding shock wave. This plasma formation is known as optical breakdown. Commonly used Nd:YAG lasers are either Q-switched, mode-locked, or both, which allows for greater efficiency, lower power settings, and fewer side effects. As a consequence free radicals are produced during Nd:YAG laser capsulotomy, but these are unlikely to have any clinical effect.[16,17,18] Singh et al found that sex of the patient did not affect the predictability of posterior capsule opacification post-operatively.[19] Tetz et al analysed energy levels for Nd: YAG laser capsulotomy for PMMA IOL's and found that sulcus fixated IOL's required higher energy. Close proximity of IOL to posterior capsule in bag fixated lenses could account for pitting observed in bag fixation.[20] Till date, only a few studies have estimated the mean energy required for capsulotomy in various subtypes of posterior capsule opacification (Medline Search).Auffarth et al analysed energy levels for capsulotomy in a series of 172 patients and found that the average total energy used was 12.7 +/- 9.4 mJ.[20] Khanzada and co-workers evaluated the complications during and following Nd: YAG laser posterior capsulotomy and found that on an average 24 pulses were required in creating an opening in the posterior capsule. The mean initial energy level in their study was 3.2 mJ and the mean summated energy level was 48.8 mJ.[21]

In our study, the mean energy level was 2.50 ± 1.66 mJ with a minimum being 1.2 mJ and maximum level 15 mJ which is comparable with Auffarth et al[20] and Khanzada and co-workers[21] work.

Moreover, our results are also comparable to other

studies as 92.1% of the patients required a range of 1.2 4 mJ of energy to clear the visual axis which is considered to be safe for the patient and the no of shots were also in the range of < 40 shots in 88.5 % of the patients this is again in a safe range to miminize the possibilities of post laser complications like intraocular pressure elevation and glaucoma, cystoid macular oedema, endothelial cells reduction and damage, retinal tears and detachment and, most commonly, intraocular lens (IOL) damage, or so-called pitting.

Khanzada and co-workers experience shown that it is unnecessary to use higher energy level,[21] we therefore aimed to achieve satisfactory opening of the posterior capsule while keeping the initial energy setting and amount of total energy used as low as possible. The total energy level and retro focusing of aiming beam is the cause of less number of complications [22], so we can suggest that Nd: YAG laser capsulotomy is a safe and reliable procedure to improve the visual acuity in patients with posterior capsule opacification. This study has limitations. The sample was small and represents the results at a single centre only.

Conclusion

We suggest that laser energy be set at lowest possible level and laser beam focused slightly beyond posterior capsule. Despite the wide range of reported complications, Nd:YAG capsulotomy has become the preferred mode of treatment for PCO since its introduction over 20 years ago. It has proven to be an effective and safe alternative to surgical discission. More research is needed to determine the risks associated with modern laser machines, laser techniques, and with current trends in cataract surgery and intraocular lenses. However, knowledge of the research base in this field can help treating physicians to tailor their management to individual patients, optimizing visual results of Nd:YAG capsulotomy and keeping potential risks to a minimum.

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CORRIGENDUM

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In Original Article,
"Clinical, Histological and Bacteriological Evaluation Acute Appendicitis"
By Abdul Basit Quresh, Ahmad Raza and Sajid Mukhtar (Department of General Surgery) page # 23. The first author name was missed during printing process in this page, but in contents page the first author's name Abdul Basit Qureshi etc. was printed correctly.

Now **Volume 10, Issue 01, January to March 2014** page # 23. Should be read as follow:
Abdul Basit Qureshi, Ahmad Raza and Sajid Mukhtar

Original Article

Frequency of Hepatic Encephalopathy in HCV Cirrhotic Patients with and Without Diabetes Mellitus

Mohammad Saeed uz Zaman, Sajid Abaid Ullah, Mohammad Azam and Kamran Saeed

Objective: To compare the frequency of hepatic encephalopathy (HE) in HCV cirrhotic patients with and without Diabetes Mellitus.

Material and Methods: This cross sectional survey of 100 patients was conducted in all medical units of Mayo Hospital Lahore after meeting the inclusion criteria. Patients were classified as diabetic if they were on oral hypoglycemic agents or insulin or have BSF>126mg/dl and non diabetic if they had BSF<126 mg/dl. The assessment for presence or absence of hepatic encephalopathy was determined using criteria defined in operational definition. HCV LIVER CIRRHOSIS is a consequence of chronic liver disease characterized by replacement of liver tissue by fibrosis, scare tissue and regenerative nodules. Cirrhosis was confirmed by Ultrasonography abdomen and hepatitis C was confirmed with ELISA test.

Results: Mean age of patient was 44.43±10.16 years with minimum and maximum ages 18 & 60 years respectively. Frequency of DM was determined as 34% among HCV cirrhosis patients while in 66% patients the diabetes was not seen. Hepatic encephalopathy was seen in 31(91.2%) of diabetics and in 48(72.7%) of non-diabetic patients. HE was not seen in 21% of patients in which 3 were diabetics & 18 were non diabetic. In this study frequency of HE was higher in diabetic group as compared to non diabetic group i.e. P- value=0.032.

Conclusion: According to this study, frequency of Hepatic encephalopathy (HE) is significantly higher in diabetic patients as compared to non-diabetic patients i.e. P value 0.032. Frequency of HE was seen in 91.2% of the diabetic patients and in 72.7% of non-diabetic patients.

Keywords: Hepatic encephalopathy (HE), diabetes mellitus (DM), liver cirrhosis (LC)

Introduction

Hepatic encephalopathy is a reversible syndrome of impaired brain function with advanced liver disease.[1] It presents with clinical findings that range from abnormal Psychometric tests to coma in patients with liver cirrhosis. Approximately 30% of patients dying of end stage liver disease have significant encephalopathy approaching to coma.[2] Due to high prevalence of hepatitis C in our community i.e. (3.0%) liver cirrhosis is attaining epidemic proportion in Pakistan.[3] Hepatic encephalopathy is a major neuropsychometric complication of liver cirrhosis, and its appearance is an indicator of poor prognosis.[4]

Diabetes Mellitus is very common in chronic liver disease (32%) and there is a strong association of DM with hepatitis C.[5,6] In cirrhosis gastro paresis and intestinal motility dysfunction is very common due to autonomic neuropathy and it worsens with advancing stages of cirrhosis. Among multiple pathological factors increased Ammonia level of gut bacteria is considered to be the most important in development of hepatic encephalopathy. Therefore this autonomic dysfunction may contribute in developing hepatic encephalopathy by increasing exposure to GI bacteria due to constipation.[7]

In Diabetic patients 50% have delayed gastric emptying and also duodenal transit time is prolonged and small intestinal motility is sluggish. These factors may lead to bacterial overgrowth in gut of Diabetic patients. Therefore frequency of hepatic encephalopathy in HCV cirrhotic patients is 95% in diabetics and 78% in non diabetic patients.[8] Because of these adverse effects of diabetes on GI motility, it is expected that patients with cirrhosis having co-morbidity with diabetes are associated with higher frequency of hepatic encephalopathy. Improved glycemic control in these patients will have positive effect on overall survival of cirrhotic patients.

Operational Definition

1. HCV liver cirrhosis: is a consequence of chronic liver disease characterized by replacement of liver tissue by fibrosis, scar tissue and regenerative nodules. Cirrhosis was confirmed with Ultrasonography abdomen and Hepatitis C was confirmed with ELISA test (cut-off value varies according to the test device used).

2. **Hepatic Encephalopathy (HE):** Patients were diagnosed clinically on presence of any of the symptoms/signs of Insomnia, Day night reversal of sleep rythm, Poor concentration, Irritability, Asterix is associated with impaired Neuropsychometric test: (number connection test). Test was considered impaired if the Time taken by the subject is more than 30 seconds.[18]
3. **Diabetes Mellitus:** All patients receiving treatment with oral hypoglycemic agents or insulin or having elevated fasting blood glucose level >126 mg/dl and BSR> 200 mg/dl.

Material & Method

This cross sectional study was conducted at medicine department (all four medical units). Mayo Hospital Lahore. This study was completed in 06 months from 15-01-2012 to 15-06-2012. The sampling technique was non probability purposive sampling.

100 patients who fulfilled inclusion/exclusion criteria were recruited from all medical units of medicine department of Mayo Hospital Lahore. Informed consent was taken and patient's demographic profile was also obtained. All patients with HCV cirrhosis (as per operational), with age from 16-60 years of both genders were enrolled. Following patients were excluded from the study.

1) Patients with active gastrointestinal bleeding (hematemessis & melena) assessed clinically.
2) Active infections like urinary tract infection diagnosed by the presence of pus cells in urine complete examination, respiratory tract infection diagnosed by productive cough or increased white blood cells count (>11000/mm3) on complete blood count.
3) Renal failure with creatinine > 2mg/dl.
4) History of taking sedatives/hypnotics like benzodiazepine, methadone, narcotics.

Data Analysis

All the data were entered in SPSS version 12 and were analyzed using same software . The quantitative variable like age was presented as mean±SD. The qualitative variables like gender, diabetes and HE in diabetic and non diabetic group were calculated as frequency & percentage. Chi-square test was used to compare the frequency of HE in DM & non DM patients A P- value < 0.05 was considered as significant.

Results

All patients with HCV Cirrhosis were taking in this study to determine the frequency of hepatic encephalopathy in diabetic and none-diabetic group. Mean age of patients was 44.43± 10.16 with minimum and maximum ages 18 years and 60 years respectively. In this study the frequency of diabetes was determined as 34% among HCV cirrhosis patients while in 66% patients the diabetes was not seen.

- Insominia was seen in 65% of the patients. Among diabetic patients the frequency of Insomina was 22(64.7) while in non-diabetic patients the frequency of insomnia was 43(65.2%). Thirty-five patients did not have insomnia in which 12 were diabetic and 23 were non-diabetic.
- Frequency of day night reversal was present in 58% of the patients. Among diabetic patients the frequency of day night reversal was 23(67.6%) while in non-diabetic patients the frequency of day night reversal was 35(53%). There were 42%patients who did not have the history of day night reversal in which 11 were diabetic and 31 were non-diabetic.
- Poor concentration was assessed in 81% of the patients in which 26 were diabetic and 55 were non-diabetic. There were 8 diabetic patients and 11 non-diabetic patients with good concentration.
- The frequency of irritability was 26 in diabetic group and 40 in non-diabetic patients. There were 8 patients with diabetes and 26 non-diabetic patients who do not have irritability.
- Asterixis was also seen in 29% of the patients and in 71% patients it was absent. Among diabetic group there were 19(55.9%) patients having

Table-1: General distribution of age.

Age/Years	Mean	%
	Mean	44.43
	Standard deviation (SD)	10.16
	Minimum	18
	Maximum	60

Table-2: Frequency distribution of diabetes.

		Mean	%
	Yes	34	34
Diabetes	No	66	66
	Total	100	100

asterixis while 15(44.1%) did not have asterixis. In non-diabetic group 10(15.2%) have asterixis and 56(84.8%) asterixis was not seen.

Morever 3(8.8%) diabetic patients had normal neuropsychometric test while 31(91.2%) had abnormal neuropsychometric test. In 18(27.3%) non-diabetic patients neuropsychometric test was normal while in 48(72.7%) non-diabetic patients neuropsychometric test was abnormal. The diabetic patients had higher frequency of abnormal neuropsychometric test as compare to non-diabetic, p-value=0.032. Hepatic encephalopathy (HE) was seen in 31(91.2%) of diabetic patients and in 48(72.7%) of non-diabetic patients. HE was not seen in 21% of the patients in which 3 were diabetic and 18 were non-diabetic. In this study the frequency of HE was higher in diabetic group as compare to non-diabetic group, i.e p-value=0.032.

Table-3: Shows the frequency distribution of various symptoms in liver cirrhosis with respect to diabetes.

Symptoms		Diabetes		
		Yes	No	Total
	Yes	22 (64.7%)	43 (65.2%)	65 (65%)
Insomia	No	12 (35.3%)	23 (34.8%)	35 (35%)
	Total	34 (100%)	66 (100)	100 (100%)
	Yes	23 (67.6%)	35 (53%)	58 (58%)
Day night reversal	No	23 (67.6%)	31 (47%)	42 (42%)
	Total	34 (100%)	66 (100)	100 (100%)
	Yes	26 (76.5%)	55(83.3%)	81 (81%)
Poor conentration	No	08 (23.5%)	11 (16.7%)	19 (19%)
	Total	34 (100%)	66 (100)	100 (100%)
	Yes	26 (76.5%)	40 (60.6%)	66 (66%)
Irritability	No	08 (23.5%)	26 (39.4%)	34 (34%)
	Total	34 (100%)	66 (100)	100 (100%)
	Yes	19 (55.9%)	56 (84.8%)	29 (49%)
Asterixis	No	15 (44.1%)	56 (84.8%)	71 (71%)
	Total	34 (100%)	66 (100)	100 (100%)

Table-4: Frequency of distribution of Neuropsychometric test with respect to diabetes.

		Diabetes		
		Yes	No	Total
	Normal	03 (8.8%)	18 (27.3%)	21 (21%)
Neuropsychometric test	No	31 (91.2%)	48 (72.7%)	79 (79%)
	Total	34 (100%)	66 (100)	100 (100%)

Chi-square test=4.60, p-value=0.032

Table-5: Frequency distribution of hepatic encephalopathy with respect to diabetes.

		Diabetes		
		Yes	No	Total
	Yes	31 (91.2%)	48 (72.7%)	79 (79%)
Hepatic Encephalopathy	No	3 (8.8%)	18 (27.3%)	21 (21%)
	Total	34 (100%)	66 (100)	100 (100%)

Chi-square test = 4.60, p-value= 0.032

Discussion

Hepatic Encephalopathy is a well recognized clinical complication of liver cirrhosis and prompt identification of well defined precipitating factor is extremely important in diagnosis and treatment of this fatal condition. About 30% of patients with cirrhosis die in hepatic coma.[9] Encephalopathy is a major neuropsychiatric complication of liver cirrhosis and its appearance is indicative of poor prognosis. Moreover the patients with specific condition of cirrhosis are at more risk to exhibit psychometric impairment, especially cirrhotic hepatitis.[10] The prevalence of Hepatic Encephalopathy in HCV cirrhotic patients is 95% in Diabetic and 78% in non-diabetic patients.[8]

The mean age of patients in this study was 44.43±10.16 years with minimum and maximum ages 18 years and 60 years respectively. The mean age in this study was lower as compared to sigal SH et al, they reported the mean age 52 years with age range of 20-75 years.

In this study the frequency of diabetes was determined as 34% among HCV cirrhosis patients while in 66% patients the diabetes was not seen. According to Sigal SH et al 31% patients were diabetic in HCV group which is smaller than to our study.[11]

Many authors reported that, DM associates to a decreased life expectancy in cirrhotic patients, as well as an earlier progression to more severe hepatic encephalopathy.[12] The mechanism that favors encephalopathy is not clear but may be dependent on diabetes-related autonomic neuropathy and subsequent constipation and/or impairment in ammonia metabolism.[13]

According our findings HE was seen in 31(91.2%) of the diabetic patients and in 48(72.7%) of non-diabetic patients. HE was not seen in 21% of the patients in which 3 were diabetic and 18 were non-diabetic. In this study the frequency of HE was higher in diabetic group as compare to non-diabetic group, i.e p-value=0.32. Our findings are comparable to another study in which fifty-four patients (83%) had HE. Twenty patients (31%) had DM.

He was present in 19(95%) patients with diabetes and 35(78%) patients without diabetes (p=0.087). Severity of HE was greater in diabetic patients (35% mild, 60% severe) than in non-diabetic patients (58% mild, 20% severe) (p=0.007). In both the mild and severe HE categories, severity of liver disease in diabetic patients was otherwise milder than in the non-diabetic patients,[11] According to sigal SH, the association between diabetes and the presence of any degree of HE did not reach statistical significance, the diabetic patients had significantly more severe HE compare with no diabetic. Diabetic patients also had severe HE at earlier stages of biochemical decomposition and portal hypertension compared with non-diabetic patients.

DM is very common in the cirrhotic population because of shared etiologies such as obesity, chronic HCV, iron overload, alcohol as well as insulin resistance associated with cirrhosis.[14] Recent studies have emphasized the importance of steatohepatitis that is commonly associated with DM in the pathogenesis of most cases of cryptogenic cirrhosis and the progression of chronic HCV,[15] Diabetes is a risk factor for decreased long-term survival in patients with cirrhosis.

Kalaitzakis E et all also reported that DM was more common in patients with hepatocellular cirrhosis compared to those with cholestatic cirrhosis but the two groups did not differ in cirrhosis or the prevalence of hepatic encephalopathy (p>0.05).[16]

Finally it is important to discuss that various studies gave a positive and significant association of HE with DM so we need to emphasize the importance of optimizing diabetic control. Although the intestinal motility dysfunction in diabetic patients is commonly attributed to autonomic neuropathy and long-standing insulin-dependent DM, acute and reversible metabolic derangements related to elevated glucose levels and hyperinsulinemia also contribute, and it occurs frequently in non-insulin dependent DM as well.[17]

Conclusion

According to this study the frequency of Hepatic encephalopathy is significantly higher in diabetic's patients as compare to non-diabetic patients i.e. p-value 0.032. In this study the frequency of HE was seen in 91.2% of the diabetic patients and in 72.7% of non-diabetic patients. Therefore it is recommended that patients with liver cirrhosis should have a good control of diabetes mellitus which may decrease incidence of hepatic encephalopathy.

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Original Article

Effect of Aortic Cross Clamp Time on Renal Function in Patients Undergoing Coronary Artery Bypass Grafting

Usman Javed Iqbal, Majid Kaleem, Tahira Kanwal and Hamid Hassan

Objective: The aim of the study is to see the effect of aortic cross clamp time on renal function post operatively.

Material and Methods: In a prospective study 90 patients were selected for CABG first time with normal renal function. A questionnaire was made to see the effect of aortic cross clamp time on post operative renal function. Demographic factors, pre operative, intra operative and post operative variables were evaluated. The patient were divided into two groups according to aortic cross clamp time, patient with aortic cross clamp time 50 minutes and patients with aortic cross clamp time > 50 minutes ultimately they were evaluated to see the occurrence of acute kidney injury (AKI).

Results: AKI was observed in 6 patients with aortic cross clamp time = 50 minutes and 36 patients with aortic cross clamp time > 50 minutes. The aortic cross clamp time was highly associated with blood urea post operatively at day 1 (p value 0.002), day 2 (p-value 0.000) and day 3 (p-value 0.000). It had significant effects on serum creatinine postoperatively day 1 (p-value 0.000), day 2 (p-value 0.005) and day 3 (p-value 0.001). It also had significant effect on reduction of GFR post operatively day 1 (p-value 0.011), day 2 (p-value 0.003) and day 3 (p-value 0.001).

Conclusion: The greatest likelihood of developing acute kidney injury (AKI) after CABG was observed with prolonged aortic cross clamp time. The levels of blood urea and serum creatinine was increased in patients with aortic cross clamp time > 50 minutes. Glomerular filtration rate (GFR) was reduced with aortic cross clamp time > 50 minutes.

Key words: Cardiopulmonary bypass, acute kidney injury, aortic cross clamp, ischemic period, morbidity.

Introduction

Coronary artery disease (CAD) is narrowing of coronary arteries which supply oxygen and nutrients to the heart. Three fourths of global deaths due to CAD occurred in the low and middle income countries.[1]

There are three methods of intervention of CAD: Medical treatment, percutaneous coronary intervention (PCI) and CABG.[2] Randomized trials proved that CABG is superior to both of these therapeutical regimen.[3] The aorta at abdominal or thoracic level is clamped to provide dry operative field with good visibility during surgical intervention however it is complicated by ischemia of lower extremities and vital organs such as kidneys. These high complication rates result in part from pathophysiologic disturbances that occur during cross clamping and unclamping of the aorta. The duration of aortic cross clamp not only affects some vital organs but also the overall results of surgical intervention.[4]

Acute kidney injury (AKI) after cardiac surgery is a major health issue. Lacking effective therapies, risk factor modification may offer a means of preventing this complication.[5] Acute renal failure (ARF) is a recognized complication following cardiac surgery. ARF was defined as doubling of serum creatinine concentration to >0.13mmol/L if serum creatinine was <0.13 mmol/L pre-operatively, or else a rise in serum creatinine of 2:0.10 mmol/L after cardiac surgery.[6] Some data indicate that 10 to 20% of patients who undergoing a CABG procedure have a serum creatinine of more than 1.5 mg/dl.[7] Renal dysfunction is an important predictor of outcome in terms of in hospital mortality, morbidity, and midterm survival in patients undergoing CABG.[8] Acute renal failure (ARF) occurs in up to 30% of patients who undergo cardiac surgery, with dialysis being required in approximately 1% of all patients. The development of ARF is associated with substantial morbidity and mortality independent of all other factors. The pathogenesis of ARF involves multiple pathways. Hemodynamic, inflammatory, and nephrotoxic factors are involved and overlap each other in leading to kidney injury. And one of them is prolonged aortic cross clamp time.[9] The purpose of

this study is to facilitate the understanding the pathophysiologic derangement in kidneys during clamping and unclamping of aorta and to provide a basis for rational therapy to reduce the complication and improve the outcome.

Materials ad Methods

It was a prospective longitudinal study of 90 patients undergoing CABG in Punjab institute of cardiology with three days follows up after surgery. Study was completed in six months. We used non probability (purposive) sampling. All patients from age 30 years onwards regardless of gender who underwent CABG were included in the study. Reoperation and all those patients that were having previous renal function impairment were excluded from the study. Patients were followed up for three days after surgery. In addition to collecting basic demographic details, frequency of postoperative Creatinine, urea levels, GFR and other related perfusion parameters were noted down on a short structured questionnaire. Patients were asked about the presence of chronic hypertension and diabetes mellitus. Information was also obtained regarding smoking history and history of heart disease in first degree relatives. Patients were divided into two groups i.e; those with aortic cross clamp time = 50 min and those with aortic cross clamp time > 50 min. Both descriptive and inferential statistical analyses were done in Statistical Package for Social Sciences (SPSS) version 16.0. We had access to the original raw data and these data were combined to perform the analyses. Categorical data were presented as percentages and in form of graphs while descriptive and frequency distribution was used for quantitative analyses. Independent sample t-test was used to compare the means of two groups in pre & post-op conditions for two groups. p-value = 0.05 was considered as significant.

Results

The mean age of our patients who underwent CABG, was 54.36±9.8 and there was female predominance (40% males and 60% females). Out of 90 patients, 36(40%) were diabetics, 56(62.2%) were hypertensive, 34(37.8%) were smokers and 20(22.2%) were presented with a strong family history of heart disease. Mean CPB time was recorded as 97.5±45.1. All patients were perfused with the mean pressures of 60.5±10.2. Out of 90 patients 38 were having aortic cross clamp time = 50 minutes and 52 were having aortic cross clamp time > 50 minutes. Of 38 patients with cross clamp time = 50 minutes; acute kidney injury (AKI) was observed in only 6 patients while patients with aortic cross clamp time >50 minutes acute kidney injury (AKI) was observed in a significant number of patients i.e. 34 out of 52; as shown in **Fig-1.**

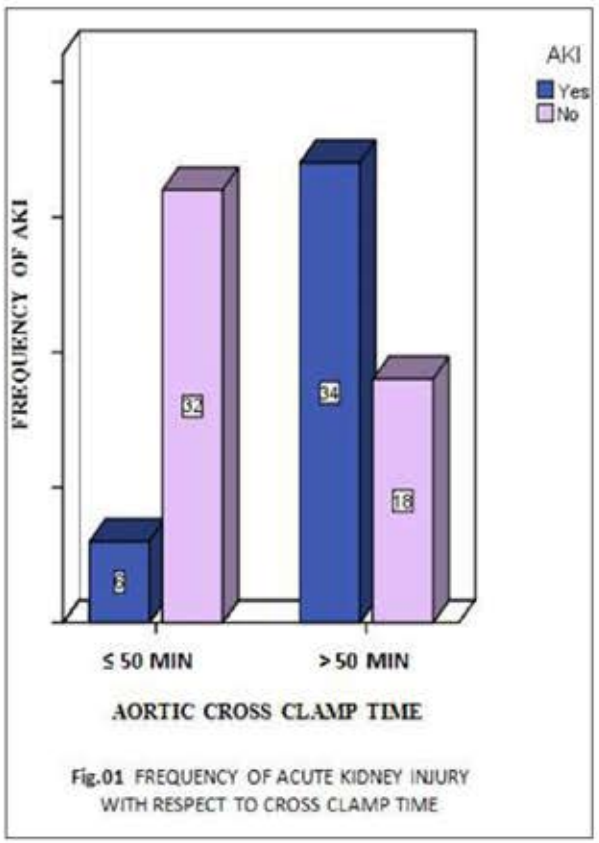

Fig.01 FREQUENCY OF ACUTE KIDNEY INJURY WITH RESPECT TO CROSS CLAMP TIME

with respect to urea levels there was a significant effect of aortic cross clamp time in successive postoperative day 1, 2 and 3. Patients with aortic cross clamp time = 50 minutes has mean blood urea levels 38.10±19.27, 47±22.58 and 47.05±24.60 for day 1, 2 and 3 respectively. For patients with aortic cross clamp time > 50 minutes mean blood urea levels were 53.16±25.91, 78.5±50.64 and 77.34±35.183 for postoperative day 1, 2 and 3 respectively. p-values 0.002, 0.000 and 0.000 for these respective days are significant.

Similarly for serum creatinine levels there was a significant effect of aortic cross clamp time in successive first three postoperative days. Patients with aortic cross clamp time = 50 minutes had mean serum creatinine levels 1.18±0.44, 1.33±0.87 and 1.29±0.78 for postoperative day 1, 2 and 3 respectively. For patients with aortic cross clamp time > 50 minutes mean serum creatinine levels were 1.58±0.55, 1.80±0.56 and 1.81±0.49 for postoperative day 1, 2 and 3 respectively. p-values 0.002, 0.000 and 0.000 for these respective days signify an association between

aortic cross clamp time and serum creatinine levels. With respect to glomerular filtration rate (GFR) there was also a significant effect of aortic cross clamp time in first three successive postoperative days. Patients with aortic cross clamp time = 50 minutes had mean GFR 76.24±35.25, 76.74±43.53 and 73.69±34.39 for postoperative day 1, 2 and 3 respectively. For patients with aortic cross clamp time > 50 minutes mean GFR was 59.13±21.76, 52.24±23.17 and 50.86±23.11 for postoperative day 1, 2 and 3 respectively. p-values 0.002, 0.000 and 0.000 for these respective days were significant.

Table-1: Shows the comparison between the urea, creatinine and GFR levels between the two groups i.e. patients with aortic cross clamp time = 50 min & patients with aortic cross clamp time > 50 min, for successive three postoperative days.

		X-clamp time< 50 min Mean ± S.D	X-clamp time> 50 min Mean ± S.D	p-value
Day-1	Urea	38.1±19.2	53.1±25.9	0.002
	Creatinine	1.18±0.44	1.5±0.55	0.000
	GFR	76.2±35.2	59.1±21.7	0.011
Day-2	Urea	47±22.5	78.5±50.6	0.000
	Creatinine	1.33±0.87	1.80±0.56	0.005
	GFR	76.7±43.5	52.2±23.1	0.003
Day-3	Urea	47±24.6	77.3±35.1	0.000
	Creatinine	1.29±0.78	1.81±0.49	0.001
	GFR	73.6±34.3	50.8±23.1	0.001

P-value <0.05 significant

Discussion

Acute kidney injury (AKI) is a major complication after cardiac surgery.[10] According to another research risk factors associated with postoperative ARF were advanced age, diabetes mellitus, hypertension, high preoperative serum creatinine levels, impaired left ventricular function, urgent operation or reoperation, concomitant procedures, low cardiac output state, re-exploration for bleeding or pericardial tamponade and prolonged cardiopulmonary bypass (CPB) and aortic cross clamp periods.[11] The causes of renal dysfunction are multifactorial with cardiopulmonary bypass[6] producing harmful effect for renal function.[12] The non physiological state of cardiopulmonary bypass (CPB) triggers inflammatory cascade and coagulation disorders that change renal function. Patients with renal dysfunction preoperatively affect long term survival.[8] Recently it has been discussed that not using the CPB during surgery may protect renal function.[13] Some authors conclude that preoperative renal insufficiency and postoperative hypotension, CPB time greater than 140 minutes, prolonged aortic cross clamp time and old age, history of diabetes mellitus, and preoperative congestive heart failure are independent risk factors for development of renal dysfunction.[14]

In this prospective study, 90 patients were selected for CABG. Patients were divided into two groups according to the aortic cross clamp time, patients with aortic cross clamp time less than or equal to 50 minutes, and patients with aortic cross clamp time more than 50 minutes and they were evaluated for occurrence of acute kidney injury after cardiac surgery. According to Walhberg *et al* there is 10 fold risk of post operative renal dysfunction when suprarenal aortic clamping was greater than 50 minutes as compared with 30 minutes or less. If suprarenal clamp duration (renal ischemia time) is brief, patients with normal preoperative creatinine levels exhibit no increase or a marginal increase in BUN or creatinine levels after surgery. Accordingly, suprarenal aortic clamping less than 50 minutes in this patient group appears safe and well tolerated.[15] In patients with a preoperative creatinine >4.0 mg/dl, the risk for acute renal failure rises to 25 to 28%.[16] The development of acute renal failure is associated with 40-50% reduction in renal blood flow. Following cross clamp of aorta there is high risk of tubular necrosis. Svensson and collegues reported an overall hospital incidence of dialysis following ARF of 5.5% and hospital mortality of 63%.[17]

According to Zakeri *et al* a raised serum creatinine or a reduced estimated GFR were both independent and strong predictors for adverse outcomes. It is known that there is a group of patients in whom, despite a near normal creatinine, the GFR is reduced and thus, GFR may be a more accurate parameter than serum creatinine to predict long term outcome.[8] According to our study there is increase in serum creatinine and reduced GFR in patients with prolonged aortic cross clamp time. The patients with aortic cross clamp = 50 min did not showed significant rise in serum creatinine, blood urea levels and no effect on GFR. While patients with aortic cross clamp time more than 50 min showed significant rise in serum creatinine, urea and reduced GFR postoperatively at day 1, 2 and day 3. So the results of our study are same as that of previous literatures.[8,11,15] There were several limitations in this study, it is an observational study done for short duration in a single center. During this study no patients were on dialysis, because patient were assessed for 3 days after operation and dialysis may started after fifth post operative day.

Conclusion

The study concludes that aortic cross clamp time has significant effect on post operative renal dysfunction. Aortic cross clamping time less than 50 minutes in the patients appears safe for renal protection. As aortic cross clamping time increases the safety margin decreases and there is more risk of developing renal dysfunction post operatively.

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Original Article

EFFICACY OF SYSTEMIC METHOTREXATE IN UNRUPTURED TUBAL PREGNANCY

Robina Shaheen, Shazia Haider, Shazia Shaheen, and Uzma Zia

Objective: To observe the efficacy of systemic methotrexate for the treatment of unruptured tubal pregnancy.

Material and Methods: It was a descriptive study carried out over a period of 6 months from 01-10-2012 to 31-03-2013 in the department of obstetrics and gynaecology unit III, Services Hospital, Lahore. A total of 65 cases were included in this study. Patients were given single dose of injection methotrexate 50mg/m^2 intramuscularly and β - hCG level was assessed at 4th and 7th day for each patient. In those patients in which β - hCG level did not fall more than 15% on day 4th and 7th were surgically treated by doing laparotomy.

Results: Among 65 patients, age distribution showed 7 patients (10.8%) were less than 20 years of age, 41 patients (63%) were between 20 -30 years and 17 patients (26.2%) were between 30-40 years of age. Mean age was 29.7±4.9 years. According to distribution of parity, 17 women (26.2%) were primigravida, 38 women (58.4%) were para 2-4 while 10 women were para 5-7. Out of65 women, 11 (16.9%) presented at <6 weeks of gestation and 54 (83.1%) at 6-8 weeks of gestational age. Mean gestational age was 6.7±1.9 weeks. Efficacy of methotrexate for the treatment of unruptured tubal pregnancy observed in 44 women (67.7%) in term of fall in β-hCG level > 15%.

Conclusion: Methotrexate is an effective medical management for ectopic pregnancies in a society where tubal conservation is of utmost importance.

Keywords: Unruptured tubal pregnancy, β- hCG, systemic methotrexate.

Introduction

Ectopic pregnancy is defined as implantation of conceptus at a site other than the uterine cavity. It is a leading cause of early pregnancy related deaths. Fortunately, after the advent of transvaginal ultrasonography and β- hCG tests, the incidence rate of ruptured fallopian tubes and case fatality rates declined.[1]

In developing countries, the reported ectopic pregnancy case fatality rate is around 1-3 % (10 times higher than those reported in developed countries).[2] Early diagnosis gives us possibility to apply the best treatment with fewer complications.[3] However, transvaginal ultrasonography and β-hCG tests are not readily available in all government hospitals in developing countries like Pakistan. Hence, ectopic pregnancy continues to be a life threatening and fatal condition, requiring emergency intervention including laparotomy /salpingectomy.[4]

For the treatment of very early stages of ectopic pregnancy, systemic methotrexate should be preferred for its simplicity, low cost and effectiveness. Single dose of systemic methotrexate 50mg/m^2 with success rate of 81% and open surgery (salpingectomy) are the two best options for the treatment of uncomplicated ectopic pregnancy.[5]

The rationale of my study is to observe the efficacy of systemic methotrexate for the treatment of unruptured tubal pregnancy in our population. It will help in tubal preservation and saving the patients from surgery thereby reducing maternal morbidity and mortality.

Material and Methods

This was a descriptive case study carried out in obstetrics and gynaecology department at Services Institute of Medical Sciences/ Services Hospital, Lahore over a period of 6 months from 01-10-2012 till 31-3-2013. All patients who attended antenatal clinic or admitted through emergency fulfilling inclusion criteria were included in study. Inclusion criteria was women aged 15-40 years, clinically stable with unruptured tubal pregnancy assessed by symptoms and signs, serum β-hCG level was less than 3000 I.U/L and on ultrasonography size of the tubal pregnancy less than 3cm and absent cardiac activity. Patients with contraindication to methotrexate injection like liver and renal dysfunction

and immunodeficient were excluded from the study.

Total number of 65 patients fulfilling the inclusion criteria were selected for the study. Patients were admitted and a proforma was filled in for data collection. After informed consent, her biodata (name, age, parity) was noted and detailed history was taken. Those fulfilling the inclusion criteria were given intramuscular single dose of injection methotrexate. Serum β-hCG levels were assesses at 4th and 7th day. Those patients in which β- hCG level did not fall more than 15% on day 4th and 7th were surgically treated by doing laparotomy. SPSS version 11 was used for data analysis. Quantitative variables like patients age, gestational age, parity, and β-hCG levels were presented by mean±SD. Qualitative variables like treatment efficacy were presented by calculating frequency and percentage.

Results

During the study period, a total of 65 patients were included. Age distribution showed 7 patients (10.8%) were less than 20 years of age, 41 patients (63%) were between 20 -30 years and 17 patients (26.2%) were between 30-40 years of age. Mean age was 29.7± 4.9 years **(Table-1).** According to distribution of parity, 17 women (26.2%) were primigravida, 38 women (58.4%) were para 2 - 4 while 10 women were para 5 - 7 **(Table-2).** Out of 65 women, 11 (16.9%) presented at < 6 weeks of gestation and 54 (83.1%) at 6-8 weeks of gestational age. Mean gestational age was 6.7 ± 1.9 weeks **(Table-3).** Efficacy of methotrexate for the treatment of unruptured tubal pregnancy observed in 44 women (67.7%) in terms of fall in β-hCG level > 15% **(Table-4).**

Table-1: Age distribution of cases (Mean±SD=29.7±4.9).

Age (years)	no	(%)
<20	07	10.8
20 -320	41	63.0
31- 40	17	26.2
Total	65	100.0

Table-2: Distribution of cases parity .

Parity	no	(%)
Primigravida	22	33.9
P2-4	38	58.4
P5-7	05	07.7
Total	65	100.0

Table-3: Distribution of cases by gestational age (Mean±SD=6.7±1.9).

Gastational age	no	(%)
<6	11	16.9
6-8	54	83.1
Total	65	100.0

Table-4: Efficacy in terms of fall in β-hCG level >15% .

Efficacy	no	(%)
Yes	44	67.7
No	21	32.3
Total	65	100.0

Discussion

The prevalence of ectopic pregnancy has increased over the last few years and accounts for 2% of all pregnancies in the United States.[7] Although this is mostly attributable to the increasing prevalence of fallopian tube diseases. More accurate detection of ectopic pregnancy has been made possible by the association of β-hCG and transvaginal ultrasonography.[8]

Some women have aggressive ectopic pregnancies that are clearly visible on ultrasound; with high β-hCG levels, short amenorrhea duration and accurate clinical courses. However other women have latent ectopic pregnancy with low β-hCG levels, longer time interval since the last menstrual period and present fewer symptoms. In screening for ectopic pregnancy, serial β-hCG measurements are important when the levels are less than 2000 I.U/L and when transvaginal ultrasound is used to rule out intrauterine pregnancy.[9]

Methotrexate is an anti-metabolite that interferes with DNA synthesis by inhibiting the action of dihydrofolate reductase. It interrupts the synthesis of purine nucleotide thymidylate. In an earlier study it was reported that when methotrexate was injected locally, the serum concentration changes were lower than those when methotrexate was given intramuscularly. These findings may reflect decreased bioavailability of methotrexate captured directly by target trophoblastic cells leading to high tissue concentrations and better efficacy. Single dose methotrexate appears effective not requiring citrovorum recovery and has better patient compliance. Treatment success is inversely related to β-hCG concentration.[10]

In our study, efficacy rate of single dose of methotrexate was 67.7%, in terms of fall in β-hCG level more than 15%. Results of current study are close to the following studies: Dhar et al[2] reported success rate of 65% for methotrexate treatment for ectopic pregnancy. Another study carried out in 2006 on efficacy of systemic methotrexate for the treatment of unruptured tubal pregnancy was found to be effective in 73.3%. Fletcher et al observed in their study 'the medically treated group', the success rate was 68%.[6]

Conclusion

Methotrexate is an effective management for ectopic pregnancies where tubal conservation is of utmost importance. It offers several benefits over surgical treatment. It is less invasive, less expensive, can be given on an outpatient basis and does not need expertise. Future reproductive expectations are better with higher intrauterine pregnancy rates and lower ectopic pregnancy rates subsequently.

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Original Article

Comparison of Outcome of Two Injectable Iron Therapies In Postpartum Iron Deficiency Anemia

Khaula Khatoon and Irum Inam

Objective: The objective of the study is to compare the efficacy and evaluate safety of two injectable iron therapies given during postpartum period (intravenous versus intramuscular) in improving postpartum anemia. The objective of the study is to compare the efficacy and evaluate safety of two injectable iron therapies given during postpartum period (intravenous versus intramuscular) in improving postpartum anemia.

Material and Methods: Post-operative and postnatal wards of Gynnae Department Jinnah Hospital, Lahore. It was randomized controlled trial with non-probability purposive sampling. The duration of study was for Six months.

Results: The comparison of investigations (Hb, MCV, Hematocrit, & ferritin) in both groups was carried out on admission, day 15, day 40 after treatment. The study revealed that intravenous iron sucrose complex was more effective in increasing Hb, MCV, Hematocrit, & Ferritin levels with significantly less complications as compared intramuscular iron sorbitol citrate.

Conclusions: Intravenous iron sucrose is more effective in improving post-partum anemia and having less complications as compare to intramuscular iron sorbitol citrate.

Keywords: Post partum anemia, Iron deficiency anemia, treatment.

Introduction

Occurrence of post partum anemia is not unusual[1,2]. Iron deficiency anemia, defined by the World Health Organization as a hemoglobin(Hb) less than 12 g/dL, is the most common cause of anemia in the postpartum period, with rates as high as 37% reportedin the first postpartum week.[2,3] One in 8 American women are iron deficient up to 12 months postpartum, and 1in 12 women remain iron deficient 13-24 months after delivery.[2] Postpartum anemiais caused primarily by inadequate iron intake prior to and during pregnancy and by peripartum blood loss[4,5] Postpartum anemia has been associated with postpartum depression, stress, anxiety, cognitive impairment,[2,6] poor mother-infant interactions, and delayed infant development.[7] Infants of mothers with iron deficiency anemia have lower developmental test scores at 10 weeks, and these developmental deficits in infants of iron deficient mothers have been shown to persist at 9 months of age, even after correction of maternal iron status.[7]

Material and Methods

This is hospital based study of six months duration on 100 patients 50 cases in each group(A&B). Post-operative and postnatal wards of gynae department Jinnah Hospital, Lahore.

Inclusion Criteria: Child bearing age women (15 to 45 years) who delivered singleton baby of any parity. Post partum anemia identified on Complete Blood examination with haemoglobin level less than 8gm/dl at 24-48 hours of delivery.

Exclusion Criteria: History of transfusion during labor or regular intake of iron supplements during pregnancy. Having history, examination or concerned laboratory investigations of any co-morbidity like infections, sepsis, renal or hepatic disease to rule out hemo-concentration, anemia secondary to renal and hepatic failure which have a different etiology and treatment as compared to postpartum anemia being studied.

Data Collection Procedure: All the patients of iron deficiency anemia fulfilling the inclusion criteria was selected from postnatal and post operative gynae ward department of Jinnah Hospital, after 24 hours of delivery. Patients were divided in two groups, group A and group B randomly by using random table number. Group-A was treated by intravenous and group B patients were treated with intramuscular iron. An informed consent was obtained for treating them for either method and using their data in the study. They were also informed that there was no health hazard involved. Both groups-A&B patients were counseled about the disadvantages of intramuscular iron like: nausea, vomiting, pain, skin discoloration, abscess formation and anaphylaxis. They were treated by intravenous iron sucrose

administered were calculated by the following formula. Weightx (target haemoglobin-actual haemoglobin x0.24+500mg). Iron sucrose was administered as an infusion in 100ml 0.9% sodium chloride solution for 30 minutes after test dose and no further supplementation was given. In Group-B patients was treated with iron sorbitol citrate iron deficient was calculated as: Elemental iron needed (mg)=(normal Hb-patients Hb)x weight (Kg)x2.21 X1000. Initially a test dose of 50mg of iron sorbitol citrate was given followed by 1000mg daily or alternate days by deep intramuscular injection. It was to be given on the outer quadrant of the buttocks using a, Z, technique to prevent dark staining of the skin. Inj. epinephrine, hydrocortisone and oxygen was available in the event of anaphylactic reaction. The investigation like Hb% and serum ferritin (mcg/L) was carried out on follow up on day 15 & day 40 after treatment of both groups. On follow-up any side effect if observed was also recorded. The response of patients in each group in terms of time taken by these injectable modalities to achieve target Hemoglobin of 11g/dl and ferritin level of 15 microgram/l and their maximum level achieved.

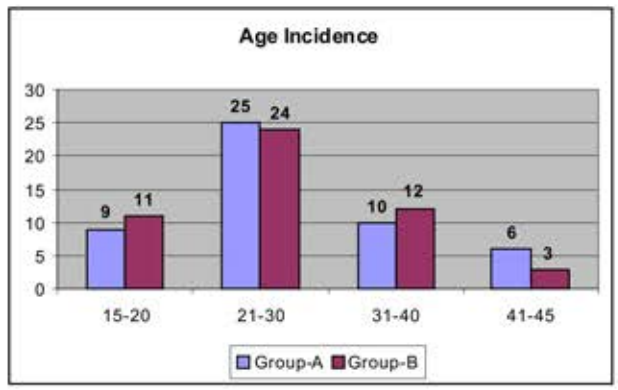
Similarly any side effect like nausea, vomiting, pain, skin discoloration, abscess formation and anaphylactic reaction if happens in both groups was taken care of and recorded. On history findings like socio-economic status (low or middle), parity/duration of marriage, last menstrual period, on examination findings like pallor, dyspnea, palpitation, fatigue/lethargy & mode of delivery and on investigation red cell indices (MCV, MCH, MCHC) & peripheral blood smear was also recorded for both groups on initially and follow-ups. All this information was recorded through a specifically designed proforma .

Data Analysis Procedure: Among the study variables, outcome variables were variables of interest. They were hemoglobin and serum ferritin. Both were quantitative variables. Other quantitative variable include red cells indices (MCV, MCH and MCHC). These were described by finding their means and standard deviation on admission and post therapy day 15 & day 40 of post-partum for both groups. Qualitative variables like age range, parity/duration of marriage, socio-economic status (low or middle) and intake of iron before or during pregnancy, findings like pallor, dyspnoea, palpitation, fatigue/lethargy, mode of delivery and side effects were described in frequencies and proportions. Outcome variables like increase in haemoglobin and ferritin level was recorded and compared between two treatment regimens, any difference found in two regimens was tested for statistically significance by applying student t test.

A P value of =0.05 was taken as significant. While background variables like socio-economic status (low or middle), parity/duration of marriage, findings like pallor, dyspnea, palpitation, fatigue/lethargy & mode of delivery was also be cross-tabulated for both groups.

Results

In this study, a total of 100 patients were recruited after fulfilling the inclusion/exclusion criteria to compare the outcome of two injectable modalities of



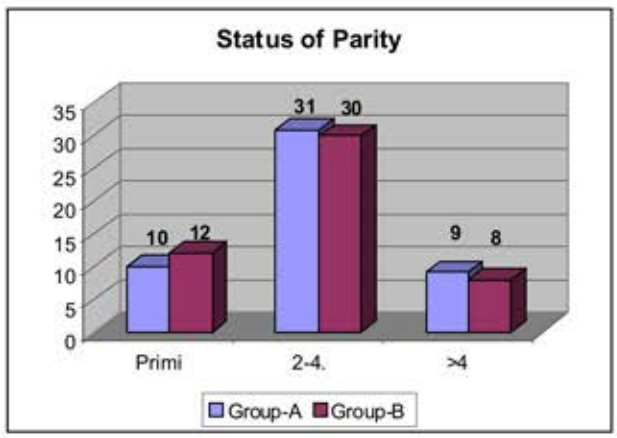


Table-3: Comparison of investigations in both gro-ups (on admission).

Investigations	Group-A Values in Mean	Group-B Values in Mean
Hb	7.2±0.1	7.2±0.1
MCVf	70	71
Hematocrit	26	27.5
Ferritin	11	12.5

Table-1: Age distribution of the subjects.

Age in years	Group-A (n=50)		Group-B (n=50)	
	Number of case	Percentage	Number of case	Percentage
15-20	09	18	11	22
21-30	09	18	24	48
31-40	09	18	12	24
41-50	06	12	03	06
Mean and S.D.	27.22±0.38		26.34±0.47	
Total	50	100	50	100

Table-2: Status of parity .

Age in years	Group-A (n=50)		Group-B (n=50)	
	Number of case	Percentage	Number of case	Percentage
Primi	10	20	12	24
2-4	31	62	30	60
>4	09	18	08	18
Total	50	100	50	100

Table-4: Comparison of investigations in both groups (day 15)

Investigations	Group-A Values in mean	Group-B Values in mean	P-value
Hb	9.2±0.11	709±0.42	<0.05
MCVf	80	72	<0.05
Hematocrit	33	29	<0.05
Ferritin	46	12	<0.05

Table-5: Comparison of investigations in both groups (day 40)

Investigations	Group-A (n=50) Values in mean	Group-B (n=50) Values in mean	P-value
Hb	11.49±0.08	11.17±0.040.42	<0.05
MCVf	86	75.5	<0.05
Hematocrit	35	31.8	<0.05
Ferritin	42.2	15	<0.05

Table-6: Comparison of side effects in both groups.

Side Effects	Group-A (n=50)		Group-B (n=50)	
	Number of case	Percentage	Number of case	Percentage
Yes	05	10	13	26
No	45	90	37	74
Total	50	100	50	100

iron the therapy given during postpartum period (intravenous versus intramuscular) in improving postpartum anemia and to compare which one is having less side effects between these two injectable modalities of iron therapy. In this research, majority of the patients were found between 21-30 years of age in both A & B groups, **table-I & fig-I** are showing the age distribution of patients. **Fig-2** & **table-2** shows status of parity, most of the patients in both groups were having parity between 2-4.The comparison of investigations in both groups (on admission) is computed, in **table-3** and value are recorded in mean. The comparison of investigations in both groups at day 15 after treatment with value in mean and their P value is shown in **table-4. Table-5** is indicating the comparison of investigations in both groups (A&B) at day 40 the values are in mean & with their P value. **Table-6** is regarding comparison of adverse effects of both drugs. It is in percentage. It revealed that 90% of group A and 74% of group B patients have no complications. Hence complications is statistically in significant (P Value=<0.05)

Discussion

Iron deficiency during pregnancy and postpartum could be due to insufficient absorption and to increased needs resulting to chronic iron deficiency and anemia.[8] It is the most common nutritional deficiency worldwide. It can cause reduced work capacity in adults[8] and impact motor and mental development in adolescents.[9]The human body does not have a mechanism of getting rid of extra iron amount and the mechanism of iron absorption plays a crucial role in iron homeostasis.[2] During pregnancy the needs for iron are increased due to the fetus, the placenta and the increased volume of maternal erythrocytes. Women in the reproductive age frequently have anemia and iron deficiency due to menstrual loss. Frequently these women are already anemic by the time they get pregnant.[10,11]

Treatment of IDA has included oral iron, intramuscular iron, iron dextran, ISC, recombinant erythropoietin and blood transfusion.[12] However, most of these have their disadvantages. Even patients who respond well to oral iron therapy require a long time(months) to reach target Hb compared with weeks required in case of treatment with ISC. The compliance is always a problem and to improve this, even iron-rich natural mineral water has been tried to treat IDA in pregnant women.[13] The use of intramuscular iron preparations in IDA is also discouraged because of pain, irregular absorption and staining. In cases of iron deficiency anemia the combination of iron supplementation and erythropoietin is not preventing iron loss and is not increasing the endogenous erythropoiesis. On the contrary high iron levels in plasma circulation after simultaneous intravenous administration of iron and erythropoietin, is essential for stimulation of erythropoiesis.[14] Intravenous iron treatment is indicated for patients with poor compliance in oral supplementation, in cases with poor iron absorption (bowel operations, or diseases),in patients with severe renal impairment, and in postpartum hemorrhage.[15,16] Recent evidence suggest that iron sucrose can be detected in high levels in the liver circulation and marrow within 5 minutes after intravenous administration. The time interval is 5 to 6 hours and the renal metabolism is minimal, less than 5% of the total dose. These data lead to the conclusion that iron sucrose is metabolically available in only a few hours after administration. This way iron is engaged exclusively from the reticulate liver cells, transferrin and apoferritin in the marrow and spleen. Then it is quickly metabolized and itis available for erythropoies is and inversion of anemia.[17] In our study after five weeks iron sucrose there was complete reversal of anemic status in all women of group A. In group B there was improvement of anemia which was not as significant as in group A, though. It is already known that intravenous administration of excessive dose of iron might cause liver necrosis, renal, suprarenal and pulmonary damage. The presence of iron sucrose in the plasma circulation is associated with absence of any undesirable effect to the patients. This absence of side effects is partly due to the lower allergenic effect of the sucrose complex because of the very slow release of elementary iron from the complex.[17,18]Also the accumulation of iron-sucrose in organic parenchymais much lower compared to iron-dextransand iron-gluconate.[18,19] In addition, incorporation into the bone marrow for erythropoiesis is faster than othercomplexes,[17,19] Rare anaphylactic reactions because of the use of iron sucrose have been reported in about0.002% of cases.[18] Our study showed that iron sucrose complex can be used in the post partum anemia patients and effective in increasing Hb, MCVf, Hematocrit and ferritin level with significantly less complications as compare to intramuscular iron sorbitol citrate. Our study is also confirmed by a local study conducted by Ahmed K, Sadiq I, Yousuf AW[20] who were intended to evaluate the efficacy, side effects and cost-

The already in use intramuscular iron therapy, iron sorbitol and concluded that iron sucrose therapy is expensive but has better compliance, on the other hand, intramuscular therapy is economical and effective but not more than intravenous therapy.

Conclusion

Intravenous iron sucrose is effective in improving Hb, MCV, Hematocrit and ferritin during post-partum anemia and having less complications as compare to intramuscular iron sorbitol citrate.

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Original Article

INCIDENCE OF OSSICLES EROSION IN MIDDLE EAR CHOLESTEATOMA

Taimoor Latif Malik and Mansoor Basir Pal

Objective: To assess the incidence of ossicles erosion in chronic suppurative otitis media with middle ear cholesteatoma.

Material and Methods: 100 patients were admitted via outpatient and emergency at the Department of ENT Unit II , Mayo Hospital, Lahore. Patients were selected after fulfilling the inclusion criteria. All the patients having a clinical diagnosis of chronic suppurative otitis media underwent aural microscopic examination. After taking the informed consent surgery was performed .During surgery the operative findings were noted in order to observe the ossicular erosion after middle ear cholesteatoma in chronic suppurative otitis media. All the data was analysed by SPSS version 18.

Results: The study included 100 patients having a clinical diagnosis of chronic suppurative otitis medial with cholesteatoma Out of these 100 patients 62 (62%) were males and 38 (38%) were females. The Mean age was 25±9 years. Radical mastoidectomy was performed in 90 patients (90%). Modified radical mastoidectomy was done in 10 patients. (10%). Ossicles erosion was observed in 80 patients (80%) and 20 patients (20%) had no erosion of ossicles.

Conclusion: Cholesteatoma is a commonest finding in chronic suppurative otitis media (Atico Antral Type). A large number of patients show ossicle erosion especially the incus which leads to conductive deafness. The intracranial and extra cranial complications of cholesteatoma can be prevented by early diagnosis and surgery. The aim of surgery is to eradicate the disease and provide safe and dry ear.

Key words: Ossicles erosion, deafness, radical mastoidectomy.

Introduction

Chronic Suppurative Otitis Media is the important cause of middle ear disease since pre-historic times.[1] Suppurative disease of middle ear is the prime cause of middle ear and mastoid pathologies in our region[2]. CHRONIC SUPPURATIVE OTITIS MEDIA is the inflammation of the lining epithelium of the middle ear cleft.[3] This disease is more common in developing countries and certain high risk population in developed countries despite the advances in medical care.[4]

Chronic Suppurative Otitis Media is main usually divided into two main groups (a) Tubotympanic and (b) Atico Antral. Chronic Suppurative Otitis Media is subdivided into two groups, Otitis Media with cholesteatoma and Otitis Media without cholesteatoma.[1,5,6].Cholesteatoma is a destructive lesion with an abnormal collection of viable and desquamated epithelium in the middle ear or mastoid region.[7]

Cholesteatoma has the capacity for independent and progressive growth at the expense of underlying bone and has the tendency to recur after surgical removal. Cholesteatoma results in complication of middle ear and temporal region.[8] Bone destruction is a very prominent feature of cholesteatoma.[9,10] Clinically cholesteatoma presents with foul smelling ear discharge, progressive hearing loss and keratin accumulation within attic or pars tensa defect usually marginal.[11,12] A long standing cholesteatoma results in hearing loss due to involvement of ossicles of middle ear. There are 4 major ossiclar defects that may result from erosion. The most common is involvement of long process of incus. The second common defect is the involvement of stapes super structure and incus. In the third defect, malleus may get involve. Finally there may be loss of ossiles except the foot plate of stapes.

Materials and Methods

Study Design: Cross-sectional descriptive study.

Place And Duration Of Study: This two years study was done in ENT Department Unit-II, Mayo Hospital, Lahore from June 2010 to June 2012.

Sample Size: 100 patients

Sample Technique: Non-probability purposive sampling.

Sample Selection

Inclusion Criteria: Diagnosis of chronic suppurative otitis media confirmed on Complete ENT Examination Systemic examination Aural Microscopic Examinatio X-Ray Mastoid, X-Ray Paranasal Sinuses and Computed Tomography (CT Scan) of petrous portion of temporal region. Pure Tone Audiometery Complete Blood Examination, Urine Exam- ination, Blood Urea and Creatiline, Serum Electrolytes, Blood sugar and viral markers.

Exclusion Criteria:

All patients who were unfit for general anaesthesia. All patients with tubo tympanic type of chronic suppurative otitis media.

Data Collection Procedure

100 patients were admitted through viaoutpatient and emergency at the Department of ENT , Mayo Hospital, Lahore. Patients were selected after fulfilling the inclusion criteria. All the information was collected on a Performa having patient's name, age, sex, address and registration number. After taking the informed consent surgery was performed. During surgery the operative findings were noted in order to observe the ossicular erosion of the middle ear.

Statistical Analysis

All the data was analysed by SPSS version 18.

Results

A total number of 100 patients with chronic suppurative otitis media with middle ear cholesteatoma were included. Out of these 70 (70%) were males and 30 (30%) were females. Male to female ratio was 2.3:1 **(Table- 1)**.

The patients shown in table 2 were divided into six age groups. In the first age group, patients aged 1-10 years (n = 10) 10%, in second age group, patients aged 11-20 years (n = 55) 55%, in third age group, patients aged 21-30 years (n = 15) 15%, in fourth age group, patients aged 31-40 years (n = 5) 5%, in fifth age group, patients aged 41-50 years (n = 10) 10% and in the sixth age group, patients aged >50 years (n = 5) 5% were observed. Mean±standard deviation of age group was 21.62±12.9 years **(Table-2)**. Radical mastoidectomy was done in 90 patients(90%) and modified radical mastoidectomy was performed in 10 (10%) patients. **(Table -3).**

Ossicleserosion in chronic suppurative otitis media with cholesteatomawas found in 82 patients (82%) and 18 patients (18%) had no ossicles erosion **(Table- 4).**

Table-1: Gender distribution of cases (n = 100).

Sex	Frequency	(%)
Male	70	70
Female	30	30

Table-2: Age distribution of cases (n = 100).

Age (years)	Frequency	(%)
1 - 10	10	10
11 - 20	55	55
21 - 30	15	15
31 - 40	05	05
41 - 50	10	10
> 50	05	05

Mean±SD21.62±12.9 Key: SD=Standard deviation

Table-3: Surgeries performed (n = 100).

Surgeries	Frequency	(%)
Radical mastoidectomy	90	90
Modified radial mastoidectomy	10	10

Table-4: Ossicles erosion in all cases (n = 100).

Ossicles Erosion	Frequency	(%)
Present	82	8/2
Absent	18	18

Discussion

Chronic suppurative otitis media (atticoantral type) is a chronic disease and can cause dangerous life threatening complications if left untreated or treated inadequately. All the 100 cases of chronic suppurative otitis media presented with the common complaints of foul smelling ear discharge, conductive hearing loss and keratin accumulating within attic region or pars tensa defect. The frequency and rate of complications have decreased after the introduction of anti-microbial agents. Early clinical detection is important to avoid the complications. During surgery, cholesteatoma alone and cholesteatoma with granulations appear to be the commonest finding.

Cholesteatoma was more common in males (70%) than in females (30%) **(Table-1)**. The finding regarding the male female ratio being 2.3:1 correlates with that of another study showing that the chronic suppurative otitis media with cholesteatomaoccurs more frequently in males.[13]

Majority of patients i.e. 55% were in the age group of 11-20 years, next 15% in the age group of 21-30 years, 10% in the age group of 1-10 years, 10% in the age group of 41-50 years, while only 5% patients were 31-40 years of age **(Table 2)**. In this study old patients were found less indisposed than young adults of age 11-20 years. The finding regarding the age of the patients correlates with another study which showed almost same incidence of age relation. That study stated that the peak incidence of the disease was in the age group between 21 to 30 years.[14]

In this study 82% cases showed ossicle erosion while 18% cases showed intact ossicles. The long process of incus was the most common portion involved . This finding correlates with another study.[15] The damage of incus as the most common ossicular defect signifies its tenuous blood supply. The second reason may be that erosion of the ossicles depends upon the site of the main focus of the disease process. The pathology was found to be mainly in the posterosuperior quadrant.

It is revealed that majority of patients belonged to poor class and lower socio-economic group where disease process was common due to poor hygiene and less affordability.

The management of middle ear cholesteatoma was early removal of the disease to prevent the intra-cranial and extra-cranial complications and to make the ear dry and safe for better hearing.

Both techniques i.e. radical mastoidectomy and modified radical mastoidectomy were used. Radical mastoidectomy was performed in 90 cases (90%) and modified radical mastoidectomy was performed in 10 cases (10%).

Regarding the surgery, canal wall down technique was preferred. It gives wide exposure and access to remove the cholesteatoma and exteriorizing the cavity in contrast to a closed technique i.e. canal wall up technique, where the chance of residual disease persist. This study, therefore, suggests that the canal wall down procedures are better and give good post-op results in otitis media with middle ear cholesteatoma.

Conclusion

Cholesteatoma is the commonest finding in operated cases of chronic suppurative otitis media (Atticoantral type). Symptoms and signs of cholesteatoma include foul smelling ear discharge, recurrent attacks of otitis media and conductive hearing loss. Most of the cases showed ossicles erosion especially the incus. Early diagnosis and treatment can prevent intracranial and extra cranial complications. Treatment of cholesteatoma is surgery with the primary goal to eradicate disease and provide a safe and dry ear with hearing improvement. It was also observed that cholesteatoma is more common in people of low socio-economic groups due to malnutrition and poor hygiene.

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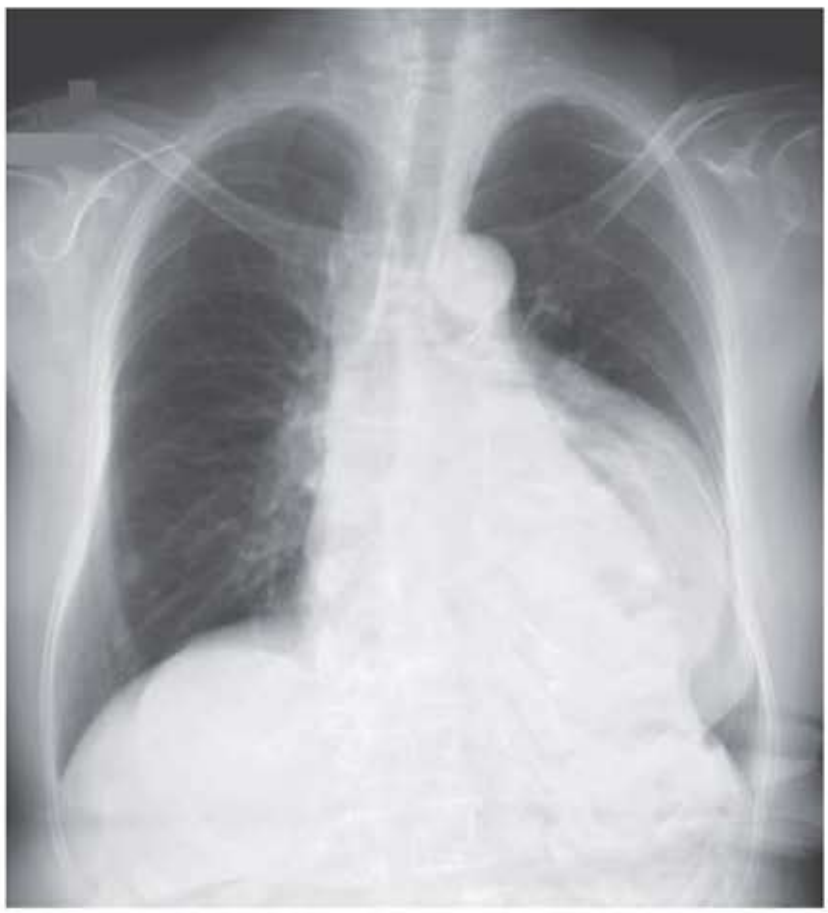
This 76 year old man presented with palpitations after meal. What does the following image shows. What is the diagnosis?



76-year-old woman with rheumatoid arthritis, diabetes mellitus, and hypertension presented with a 1-month history of palpitations that occurred only after she had eaten dinner. The sensation was felt at the center of the chest and lasted for 10 to 15 minutes after the meal. An electrocardiogram was unremarkable.

A chest radiograph (Panel A) showed a mediastinal shadow (white arrowheads) lateral to the left heart border (black arrowheads). Computed tomography of the chest revealed a left diaphragmatic hernia (Panel B), with the stomach positioned in the thorax (Panel C, coronal view), abutting the left ventricle (Panel D, axial view, arrowheads).

The stomach was visibly twisted, a finding consistent with a gastric volvulus. Gastric endoscopy revealed a volvulus, with twisting of the mucosa. After surgical repair of the hernia and volvulus, the palpitations resolved, and at follow-up more than 1 year after surgery, the patient remained free of symptoms.

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Original Article

Assessement of Cases of Congenital Cataract in Patients Admitted in Hospitals of Lahore

Muhammad Naeem, Najam ud Din, Malik Shahid Shaukat, Khaleeq Ahmad Qureshi, Irfan Yameen and Sahar Fatima

Objective: To observe the different patterns of congenital cataract in children and to determine the age at which maximum cases are reported.

Material and Methods: Descriptive cross sectional .Study was conducted on patients of congenital cataract in different hospitals of Lahore and Study duration was 03 months. All participants were selected by non probability purposive sampling technique. Parents of patients of congenital cataract were interviewed after taking verbal consent using questionnaire method. Data was analyzed using SPSS.

Results: In this study 30 cases of congenital cataract were examined age ranging from 0-8 years in the four hospitals of Lahore. Majority (70%) of the cases of congenital cataract are reported up to age 4 years. Out of 30 cases of congenital cataract 56% are male and 43% are female. Majority (83.3%) of cases are reported with bilateral congenital Cataract. Nystagmus and squint as associated symptoms are present in majority (63.3%) cases. Hereditary trait regarding congenital cataract is observed in 46.7% of cases. Maternal rubella infection as a cause of congenital cataract is reported in majority (73.3%) of cases. Congenital cataract in associated with metabolic disorders is reported in 26.7% of cases. Majority of patients (73.3%) are having lamellar pattern.

Conclusion: Most patients are reported up to the age of 4 years. Males are predominantly affected. Maternal rubella is found to be commonest cause. Most of cases are with bilateral presentation. Majority of cases have lamellar pattern.

Keywords: Congenital cataract, rubella Infection, blindness.

Introduction

Cataract is any light scattering opacity of lens present at birth. 2/3rd are bilateral, most of them are due to autosomal dominant mutation, unilateral cataracts are sporadic, only 10% have a definite cause. Infantile prevalence in U.S.A showed a rate of 3-4 visually significant cataracts per 10000 live births.[1] Common causes are hypoglycemia, trisomy, myotonic dystrophy, infectious diseases {TORCH}, prematurity. About fifteen genes involved in cataract formation have been identified and the inheritance is most often autosomal dominant, although it can be x-linked or autosomal recessive.[2] High summer heat upto 5 degree increase in apparent temperature may cause congenital cataract with 51% increase in the risk of congenital cataract.[3] Cataracts are felt to be visually significant. If the treatment is delayed it can lead to amblyopia and visual loss can occur in later stages .Surgical intervention is the only option, the timing of surgery is critical for visual development, most investigators recommend surgery within the first two months of life.[4] There has been evidence to suggest that before one month of age the risk of aphakic glaucoma is increased.[5] Intraocular lens implantation in children is considered to be safe and acceptable in children.[6]

Material and Methods

It was a descriptive cross sectional study conducted in Services Hospital, Lahore, Jinnah Hospital, Lahore, Mayo Hospital, Lahore, Rehmat Begum Trust Hospital, Lahore. The study duration was three months. The study subjects were children up to 8 years of age. Patients with acquired cataract were excluded from the study. All the parents of the subjects were explained the purpose and process and benefits of the study. Confidentiality was ensured. A check list and a questionnaire was developed. Cataract was diagnosed by screening eye examination including.

1) Red reflex test by direct ophthalmoscope.
2) Slit lamp examination.

A Sample of 30 patients was selected by non probability purposive sampling technique. Data was analyzed by SPSS computer software.

Results

In our study we observed that 70% of the reported cases of congenital cataract were up to age 4 years. Out of 30 cases of congenital cataract, 56% were

male and 43% were female (**table-1)**. It was observed that majority (83.3%) reported with bilateral congenital Cataract (**table-3)**. Nystagmus and squint as associated symptoms was present in majority (63.3%) cases. Hereditary trait regarding congenital cataract was observed in 46.7% of cases. Maternal rubella infection as a cause of congenital cataract was reported in majority (73.3%) of cases. Congenital cataract in associated with metabolic disorders was reported in 26.7% of cases. On slit lamp examination of cases of congenital cataract. It was observed that majority of patients (73.3%) were having lamellar pattern (**table-4**).

Table-1: Slit lamp pattern presentation of patient gender of patient cross tabulation count.

Gender of Patients			Presentation of Patient		
			One eye	Both eyes	Total
		Lamellar	02	11	13
Male	Slit Lamp Pattern	Posterior Capsular	02	02	04
	Total		04	13	17
		Lamellar	0	09	09
Female	Slit lamp Pattern	Posterior Capsular	01	03	04
	Total		01	12	13

Table-2: Age of presentation in years(grouped) associated symptoms of patient cross tabulation count.

		Associated symptoms of patients		
		Present	Absebt	Total
	4 or less	13	08	21
Age of presentation in years	5 or more	06	03	09
Total		19	11	30

Table-3: Presentation of patient mode of delivery cross tabulation count.

		Mode of delivery		
		Normal	C-section	Total
	One eye	05	0	05
Presentation of patients	Both eyes	18	07	25
Total		23	07	30

Table-4: Slit lamp pattern presentation of patient age of presentation in years(grouped) cross tabulation.

Age of presentation in years (grouped)			Presentation of Patient		
			One eye	Both eyes	Total
		Lamellar	02	13	15
4 or less	Slit Lamp Pattern	Posterior Capsular	02	04	06
	Total		04	17	21
		Lamellar	0	07	07
5 or more	Slit lamp Pattern	Posterior Capsular	01	01	02
	Total		01	08	09
	Slit lamp Pattern	Lamellar	02	20	22
Total		Posterior Capsular	03	05	08
	Total		05	25	30

compilation and analysis.

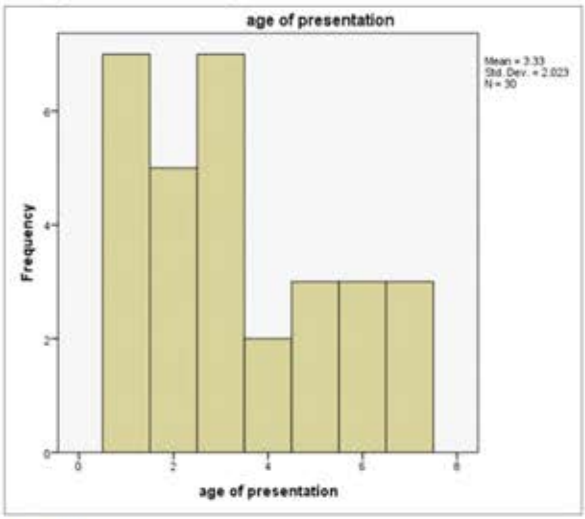

Fig-1: Age of presentation.

Discussion

Congenital cataract is responsible for nearly 10% of all vision loss in children world wide.[16] Their early detection and treatment holds a vital position in the prevention of permanent visual loss. In this study, 30 cases of congenital cataract were examined age ranging from 0-8 years in the four hospitals of Lahore. In our study we observed that 70% of the reported cases of congenital cataract were up to age 4 years.

Out of 30 cases of congenital cataract 56% were male and 43% were female (**table-1**), this is in accordance with the research carried out in West Bank and Gaza Strip.[17] It was observed that majority (83.3%) were reported with bilateral congenital Cataract (**table-3**). It is in accordance with the result of a research carried out in United Kingdom.[18] Nystagmus and squint as associated symptoms was present in majority (63.3%) cases and is in accordance with research carried out in United States of America that these are most common ocular anomalies associated with congenial cataract.[19] Hereditary trait regarding congenital cataract was observed in 46.7% of cases. According to research carried out in china upto 25% of cases of congenital cataract are believed to be inherited.[20]

Maternal rubella infection as a cause of congenital cataract is reported in majority (73.3%) of cases. This result is in contraindication with research carried out in South India.[21] Higher incidence of maternal rubella infection in Pakistan is due to unhygienic delivery practices and lack of awareness about rubella vaccination. Congenital cataract in associated with metabolic disorders is reported in 26.7% of cases. It is in accordance with the research carried out in U.S.A which shows that only few cases of congenital cataract are associated with metabolic disorders.[22]

After slit lamp examination of cases of congenital cataract it was observed that majority of patients (73.3%) were having lamellar pattern.

Conclusions

Most patients were reported up to the age of 4 years. Males were predominantly affected. Maternal rubella was found to be commonest cause of congenital Cataract due to septic birth practices. Majority of cases of congenital cataract were with bilateral presentation. Majority of cases had lamellar pattern on slit lamp examination.

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Original Article

Internal Iliac Artery Ligation - Life Saving Procedure in Massive Postpartum Hamorrhage

Jamshid Feroze, Noreen Rasul and Rubina Sohail

Objective: To study the role of bilateral internal iliac ligation in arresting postpartum hamorrhage.

Material and Methods: The study was carried out from 1st July 2012 to 30th June 2014 in the department of Obstetrics and Gynaecology unit II, Services Institute of Medical Sciences / Services Hospital Lahore. Total births were 4496 in the duration of two years. Out of them 3366 were caesarean section and 1130 were spontaneous vaginal deliveries. Total massive postpartum hemorrhage that is blood loss > 1 litre, was in 46 patients. Internal iliac ligation was carried out in fifteen patients. In all these patients they were failed medical treatment. Even after B-Lynch suture and abdominal hysterectomy bleeding did not stop.

Results: Total patients enrolled in the study were fifteen. Two (13%) patients were primigravidae in which uterus was saved and bilateral internal iliac ligation was done due to uterine atony. In five (33%) patients due to uterine rupture and in eight (53%) patients due to morbidly adeherant placenta there was massive hamorrhage and bilateral internal iliac ligation was done. In thirteen (86%) patients total abdominal hysterectomy was done along bilateral internal iliac ligation. In five (33%) patients packs were inserted after ligation at bladder base in case of morbidly adherent placenta. Packs were removed after 48 hours in second laparotomy. All the patients were saved and discharged in satisfactory condition except one who already came with disseminated intracoagulation disorder. Among complications in three (20%) patients there was injury to bladder that was stitched and in seven (46%) patients there was wound infection.

Conclusion: Early resort of bilateral internal iliac ligation effectively prevents hysterectomy in women with atonic uterus and in uterine rupture and morbidly adherent placenta it saves the life if done on time.

Keywords: pregnancy, iliac artery, postpartum haemorrhage.

Introduction

Ligation of hypogastric Internal iliac arteries for the control of profuse pelvic bleeding has long been recognized as a life saving procedure. First reports of successful internal iliac ligation were published as early as the 1890s. It is a long established method for controlling hemorrhage refractory to vaginal tamponade. In patients with cervical cancer.[1] By the middle of 20th Century, the indication has been widened to control excessive post delivery haemorrhage.[2] Since that time hypogastric ligation has been a main stay of controlling intractable haemorrhage in an effort to pressue the uterus used in both obstetric and gynaecologic surgery.[3]

There are several reports of pregnancies carried to full term after bilateral internal iliac artery ligation.[4] Postpartum haemorrhage is one of the five leading causes of maternal mortality world wide.[5] Massive haemorrhage after child birth occurs with a frequency of one or two in 1000 deliveries in the developed countries and it is even more prevalent in the developing countries.[5] In developing countries, 140,000 women are dying of postpartum haemorrhage world wide each year.[6]

Haemodynamic changes occur after ligation of internal iliac arteries. There is rich collateral circulation on both sides of the pelvic cavity, with both horizontal and vertical anastomosis. It is chiefly the vertical part of this network that is activated upon ligation, with the iliolumbar, lateral sacral, uterine and middle rectal arteries. The horizontal system is mainly based on anastomosis between the obturator and inferior epigastric arteries.[7] Significant changes include a decrease in pelvic arterial blood pressure and pelvic arterial blood flow 25 % and 50 % decrease respectively. The net effect of internal iliac artery ligation is a transformation of the pelvic circulation into a venous system. Venous bleeding can usually be controlled by temporary pressure like by packs, so that blood clot could form at the site.[8]

Technique of internal iliac ligation is easy to learn. During laparotomy the technique includes palpation of bifurcation of the common iliac artery and opening of the posterior peritoneum just distal to that site. Anatomy is usually revealed demonstrating the internal and external iliac arteries and their veins as well as ureter generally retracted medially. Using right angle clamp, manipulating internal iliac artery from lateral to medial, ligation is placed with double strand absorbable suture distal to the bifurcation by atleast two to three centimeter.[9] Dorsalis pedis pulses bilaterally should be checked after ligation.

Anatomical consideration the common iliac artery bifurcates into two main branches the external iliac artery which becomes the femoral artery at the inguinal ligament and internal iliac artery, that descends into the true pelvis. The latter divides into anterior and posterior branches. The important anatomical relations of internal iliac artery are as follows. Anterior and medial is covered by peritonium, ureter is anterior, external iliac vein an obturater nerve are posterolateral and internal iliac vein is postero medial. Complications of the procedure include injury to iliac vessels, ureter and surrounding organs.[8] Alternative surgical methods to internal iliac artery ligation are uterine artery ligation[10] and selective arterial embolization of either hypogastric or uterine arteries.[11]

Material and Method

The study was carried out from 1st July 2012 to 30th June 2014 in the period of two years in the department of Obstetrics and Gynaecology unit II Services Institute of Medical Sciences/Services Hospital Lahore. Total births were 4496 in the duration of two years. Out of them 3366 were caesarean section and 1130 were spontaneous vaginal deliveries. Total massive postpartum hemorrhage was in 46 patients. Internal iliac ligation was carried out in fifteen patients. In all these patients they were failed medical treatment. Even after B-Lynch suture and abdominal hysterectomy bleeding did not stop. They all came with massive postpartum haemorrhage. Blood loss was more than one litre. After evaluation, I/V lines were secured. Atleast six units of blood were arranged. Two patients were primigravidae, came with home delivery with uterine atony and severe postpartum haemorrhage. Medical treatment failed to control bleeding. Her laparotomy was done and B-lynch suture was applied, but bleeding persisted. Internal iliac ligation was done and uterus was saved. Five patients came with uterine rupture. Out of them three patients had history of previous caesarean section and had trial of labour at private setup. They came with history of bleeding per vaginun. After evaluation and arrangement of blood, laparotomy was done. Baby was found in peritonial cavity. Tears were extending to broad ligament laterally and to Cervix inferiorly. Inspite of hysterectomy bleeding did not stop. So internal iliac artery ligation was done. Eight patients were diagnosed case of placenta praevia with previous caesarean section and percreta was diagnozed on doppler ultrasound. All were elective procedures. At least ten units of blood was arranged and further six units were cross matched. In all cases senior team of obstetrician and anaesthetist dealt with the patients. After delivery of baby, placenta was found to be morbidly adherent. Hysterectomy was immediately planned. Even after hysterectomy, bleeding persisted. Bilateral internal iliac ligation was done. In five patients there was still ooze from bladder base. Three packs were inserted at bladder base. Drain was inserted in abdomen and was closed. Packs were removed after forty eight hours. All the patients were saved and discharged in satisfactory condition except one who was already received in dessiminated intra vascular coagulation DIC in the condition of shock. She expired due to DIC. She came with uterine rupture with previous caesarean section in emergency. She was unbooked patient. Inspite of total abdominal hysterectomy and internal iliac ligation we could not save her.

Results

Total fifteen patients had internal iliac ligation. Internal iliac ligation was more indicated in morbidly adherent placenta. If expertise are available, there are lesser chances of complications. In long term follow up after six months the morbidity was in the form of hot flushes, anxiety and depression. This table shows that more procedures were done as elective, with senior team of obstetrician and anesthetist.

Table-1: General distribution of age and parity.

Age	Years	no	%
	20-30	05	33.33
	31-40	08	53.33
	41-50	02	13.33
Parity	P1	02	13.33
	P-2-P5	10	66.66
	P5 and above	03	20

Table-2: Indications.

Cause	no	%
Atony	02	33.33
Uterine Rupture	05	33.33
Adherent Placenta	08	53.33
DIC	01	6.66

Table-3: Complications.

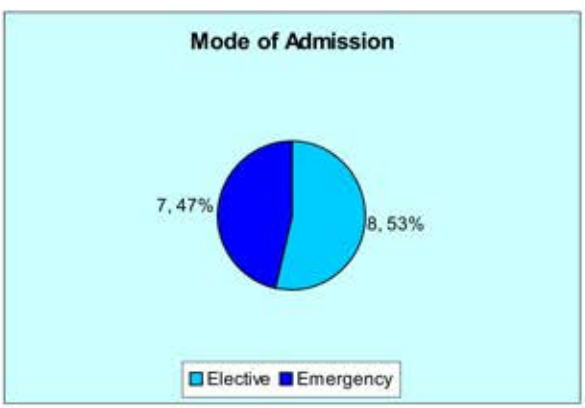
Complications	no	%
Injury to bladder	07	20
Woud infection	03	46.66
DIC	01	6.66
Injury to ureter	0	0
Injury to adjancet vessels	0	0
Mortality	01	6.66
Long term morbidity Follow up six months	06	40

Table-4: Other procedures along bilateral internal ligation

Procedure	no	%
Total abdominal hysterectomy	13	86.66
Uterus conserved	02	13.33
Packs inserted and remover after 48 hrs	05	33.33
B-Lynch suture	02	13.33

Table-5:

Admission	no	%
Elective	8	35.33
Emergency	05	46.66



More than 10 units of blood were arranged and bed for patient in intensive care unit was booked for intensive care.

Discussion

Postpartum haemorrhage is associated with a great degree of morbidity and mortality and has to be controlled immediately without compromising the rest of the pelvic blood supply. Internal iliac artery ligation is a time tested, easy method and achieves the goal.

In a study carried out at KEM hospital, Pune India, out of 110 women who had internal iliac ligation, 88 had postpartum heamorrhage for uterine atony 36, genital tract injury 23, placenta previa 21, abruption 4, uterine inversion 3, and coagulopathy 1, hysterectomy was performed after internal iliac ligation failed to arrest bleeding in 33 39% of 84 women. Hysterectomy was more in uterine rupture 79%, one women had iliac vein injury that was repaired. There was no ischemic complication during six week period. [12]

In our study in 15 patients internal iliac ligation was done. Out of them 8 53% patients had procedures due to morbidly adherent placenta 5 33% had due to uterine rupture two 13% had due to uterine atony and 1 6% had due to coagulopathy. In 13 86% patients total abdominal hysterectomy was done. In 2 13% cases uterus was conserved in young patients that had uterine atony.

In 5 33% patients in spite of total abdominal hysterectomy and internal iliac ligation, there was ooze from bladder base, three packs were inserted at bladder base and abdomen was cloded. Packs were removed after 48 hours in second laparotomy.

Out of complications, in our study there was injury to bladder in 3 20% cases, wound infection in 7 46% and mortality in 1 6%. There was no injury to ureter or adjacent vessels. In follow up after six months, 6 40% patients had minor disorders like hot flushes and depression. There was no ischaemic compromise.

In another study of DICLE University Medical Faculty Diya, Yarbakir, Turkey, Total 58 patients underwent internal iliac ligation. All patients were haemodynamically unstable uterine atony was leading cause of severe postpartum heamorrhage coagulopathy developed in 26 days in postpartum period. Uterus was preserved in 17 32%, 3 patients died of complications. In 13% life threatening cases of severe PPH, could not be controlled with conservative medical and surgical treatment and finally internal iliac ligation was carried out. [13]

In another study carried out by Poppz, in 117 patients with massive pelvic haemorrhage only one woman

had surgical complications that is injury to internal iliac vein. It was sutured and patient recovered uneventful.[14] in our study there was no injury to adjacent vessels or ureter. In another carried out at Semmal Weis university hospital in Budapest, in 37 obstetric cases, indication of bilateral ligation was placenta praevia and abruption in 4 cases, placenta accreta, increta and percreta in 3 cases. Paravaginal tumor in 1 case and dehiscence of previous caesarean section in 1 case. Hysterectomy was done in 7 patients and in 2 uterus was preserved. In the same study second laparotomy was performed in 10 cases of uterine atony. Following caesarean section bleeding was controlled by bilateral ligation of internal iliac in 4 cases, hysterectomy was performed in 1 case and uterus was preserved in 3 out of 10. In uterine rupture bilateral ligation was done 3 cases and hysterectomy in 2 cases. In our study B-Lynch suture was applied in 2 out of 15 cases for uterine atony. In uterine rupture hysterectomy was only done when repair was not possible due to tear extending to broad ligament.

Conclusion

Internal iliac ligation is useful in treatment and prevention of postpartum haemorrhage from any cause. Early resort of internal iliac ligation effectively prevents hysterectomy in women with atonic uterus when medical treatment fails. Internal iliac ligation facilitates hysterectomy to prevent massive haemorrhage. In antenatal period patients have risk factors of PPH, they must be transferred to appropriate centers to prevent postpartum haemorrhage. Inspite of aggressive medical treatment, early consideration should be given to surgical intervention.

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Original Article

Dengue Infection in Cancer Patients

Naveed Rashid, Faisal Sultan, Syed Hammad Nazeer, Aun Raza and Amjad Mahboob

Objective: To study the clinical behaviour of dengue infection in cancer patients.
Material and Methods: We reviewed medical records of cancer patients who were diagnosed with dengue infection in year 2011 as per discharge notes. Patients fulfilling revised dengue WHO/TDR classification with positive dengue IgM serologies were finally chosen for analysis.
Results: From initially screened 63 patients, 43 fulfilled revised dengue WHO/TDR classification criteria, 31 (of these 43) with positive dengue IgM were finally analysed. There were 16 males and 15 females, mean age was 39.0 (23.0) years. 23 patients were = 18 years of age. 81% patients reported within first three days of illness. Major cancer bulk was from solid organ cancer group (n=21) followed by haematological group (n=10). Presenting features were fever (100%) followed by aches (58.1%), haemorrhagic manifestations (35.5%), vomiting (29%) and diarrhoea (25.8%). Twelve (38.7%) patients developed severe dengue with one death making 3.2% crude mortality rate.
Conclusion: The spectrum of dengue infection severity in cancer patients seems to be different from general population. Clinically dengue was more severe with solid organ cancers as compared to hematologic cancers possibly highlighting the role of cellular mediated immunity. Other risk factors identified were relatively elder age and more co-morbid conditions.
Key words: Dengue, severe dengue, cancer, Pakistan.

Introduction

Over the last few decades, dengue infection has become a global threat and this may be attributable to increasing prevalence of dengue vector species favoured by different factors associated with gradual urbanization of societies.[1-5] A growing population at risk also reflects that an ever larger number of those with altered or depressed immunity will also develop dengue infection because of the interplay of different host factors and pathogen as an important determinant for different clinical manifestations of dengue infection.[6-8] As the data on various clinical manifestations of dengue infection in cancer patients is scarce and is limited to case series or case reports only therefore we decided to review the clinical and laboratory characteristics of dengue infection among cancer patients from a tertiary care hospital in Pakistan.[9,10]

Material and Methods

This descriptive and retrospective study was conducted in Shaukat Khanum Memorial Cancer Hospital & Research Centre. This tertiary care cancer hospital caters cancer patients of all ages coming from different areas of the country. The hospital's electronic medical records (EMR) were reviewed for all those cancer patients who had a discharge diagnosis of dengue infection (either suspected or proven) admitted from January 2011 till December 2011. We defined dengue infection (1) as per criteria given in the revised dengue classification by World Health Organization (WHO) / TDR (UNDP-World Bank-WHO special program for Research and Training in Tropical Diseases) group in 2009 11 plus (2) positive dengue IgM (immunoglobulin M) serology as measured by Calbiotech Dengue virus IgM ELISA kit. According to WHO / TDR group, dengue infection is classified according to the presence or absence of different set of clinical and laboratory parameters. These include any patient who live in / travel to dengue endemic area with fever and 2 of the following criteria (a) nausea or vomiting (b) rash (c) aches and pains (d) positive Tourniquet test (e) leukopenia and (f) any warning sign. Warning signs include (1) abdominal pain or tenderness (2) persistent vomiting (3) clinical fluid accumulation (4) mucosal bleed (5) lethargy, restlessness (6) liver enlargement >2 cm (7) increase in haematocrit concurrent with rapid decrease in platelet count. Patients fulfilling above criteria but not having warning signs are defined as non-severe dengue without warning signs (NSD-) while patient having warning signs as well are defined as non-severe dengue with warning signs (NSD+). Severe dengue (SD) infection is defined if a patient has evidence of

(1) severe plasma leakage i.e. shock, fluid accumulation with respiratory distress (2) severe bleeding (3) severe organ involvement e.g. AST or ALT =1000 U/L, impaired consciousness, heart and other organs.

Out of total 63 cases retrieved from hospital's EMR, 43 fulfilled the revised dengue WHO/TDR group classification criteria. 31 out of these 43 patients had positive dengue IgM serologies and were selected for further analysis. Remaining 12 patients were excluded due to missing or negative dengue IgM serologies (Figure 1). Dengue IgG (Immunoglobulin G) results were not considered in screening these cases since this test was not uniformly performed in all patients. Amongst other laboratory parameters, unfortunately, liver function tests (available for 18 out of 31 patients) and peripheral blood smear to detect concomitant malarial parasites (available for 23 out of 31 patients) were excluded because of missing values in selected cases. Neutropenia was defined as absolute neutrophil count of < 500 neutrophils per ml.

These finally chosen 31 cases with positive IgM serology were reviewed in detail for different parameters like demographic profile, clinical and laboratory features, clinical management, complications, follow up and outcomes. IBM SPSS version 19 was used for statistical data entry and calculation. An exemption from hospital's Institutional Review Board was taken along with the waiver of informed consent.

Results

The study analysis showed that all cases with dengue infection presented over a span of three and a half months from 26th July, 2011 to 6th November, 2011 (Figure 2). The basic characteristics of all patients are presented in Table 1. Twelve (38.7%) patients had severe dengue and only one patient died constituting a crude mortality rate of 3.2%. The distribution of different cancer patients who developed dengue infection is given in Table 2. The frequencies of presenting symptoms and warning signs (as per WHO/TDR group classification criteria) in dengue infected cancer patients are given in Table 3. Important laboratory and some relevant management parameters are summarized in Table 4. The dengue infection related complications were seen in five patients with severe dengue (SD) i.e. hepatitis (n=2), pleural effusion (n=1), acute kidney injury (n=1) and pulmonary embolism (n=1).

A total of twenty five (80.6%) cancer patients had received chemotherapy within last 1 year. Out of these, 13 (42%) patients received chemotherapy within last two weeks and 5 (16.1%) of them

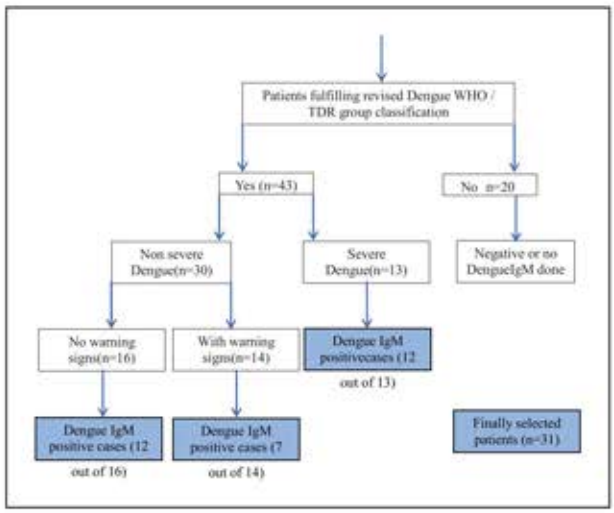

Fig-1: Flow chart of patients' selection schema. Hospital's electronic medical record was retrieved for cancer patients with the discharge diagnosis of dengue infection (n=63). Their data was reviewed according to dengue WHO / TDR classification. Those fulfilling the criteria (n=43) with positive dengue IgM serology (n=31) were finally chosen for the study.

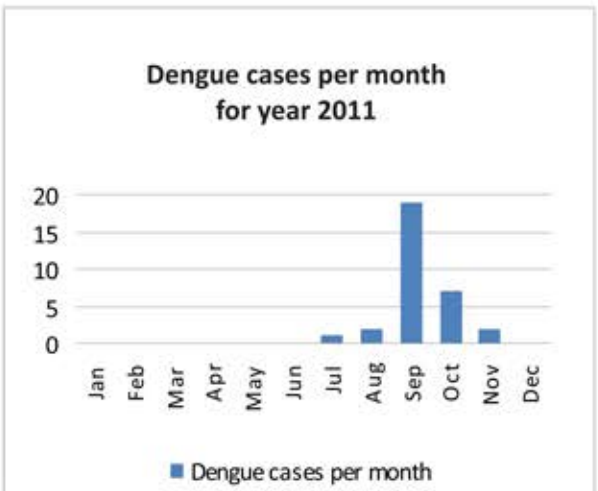

Fig-2: Distribution of dengue cases for year 2011. The maximum numbers of cases per month were seen in the post monsoon season (September and October 2011).

Table-1: Basic characteristics of dengue patients .

		Dengue Infection		
		Non Severe (n=19)	Severe (n=12)	Total (n=31)
Mean age (years)		36.0 (22.2)	43.7 (23.8)[a]	39.0 (22.8)
Age groups	<18 years	05	03	8
	> 18 years	14	09	23[b]
Gender distribution	Male	10	06	16
	Female	09	06	15
Days of illness at presentation	1-3 days	14	11	25[c]
	4-7 days	03	0	03
	> days	0	01	01
	Unsure	02	0	02
CO-morbidity	DM	0	03	03
	HTN	01	04	05
	IHD	0	01	01
	Dyslpidemia	0	01	01
	Hypothyroidism	01	0	01
	CLD	03	0	03

A=Mean age was higher in patients with severe dengue infection. b=Major bulk of patients was from adult age group (74%). c=Major p ortion of patients presented within 3 days of illness (81%).

Table-2: Basic characteristics of dengue patients .

Cancer Category	Cancers	Number of case
Solid organ cancers (n=21)	Breast cancer	05
	Nasopharyngeal cancer	01
	Laryngeal cancer	01
	Lung cancer	01
	Gastrointestinal stromal tumor	01
	Colonic cancer	01
	Rectal cancer	02
	Wilm's tumor	01
	Adrenal cancer	01
	Endometrial cencer	01
	Granulosa cell cancer	01
Hematologic cancers (n=10)	Acute lymphcytic leukemia	05
	Infantile leukemia	01
	Hodgkin's lymphoma	03
	Non-Hodgkin's lymphoma	01

Major bulk (68% cases) was from solid organ cancers while 32% cases were from hematologic cancers.

Table-3: Basic characteristics of dengue patients .

		Dengue Infection		
		Non Severe (n=10)	Severe (n=21)	Total n (%)
Symptoms	Fever	19	12	31 (100)
	Aches	12	6	81 (58.1)
	Mucosal bleed	3	8	11 (35.5)
	Nausea	2	2	4 (12.9)
	Vomitting	4	5	9 (29)
	Diarrhea	4	4	8 (25.8)
	Abdominal pain	03	3	6 (19.3)
	Cough	03	4	7 (22.6)
	Sore throat	02	3	5 (16.1)
	Dysuria	02	0	2 (6.4)
	Rash	02	0	2 (6.4)
Warning signs	Shock	0	4	4 (12.9)
	Altered mental status	0	5	5 (16.1)
	Lethargy/restlessness	1	8	9 (29)
	Respiratory distress	0	4	4 (12.9)
	Persistent vomtting	3	01	4 (12.9)
	Abdominal vomitting	3	7	10 (32.2)
	Pleural effusion	0	2	2 (6.4)
	Ascites	0	1	1 (3.2)
	Hepatomegaly	1	0	1 (3.2)
	Severe bleed	0	4	4 (12.9)

Table-4: Hematology and management parameters of dengue patients.

Hematology paramounts	Dengue Infection		
	Non Severe (n=19)	Severe (n=12)	Total (n=31)
High WBC (>11x10^3/ml)	0	2	2
Normal WBC (4-11x10^3/ml)	07	04	11
Low WBC (< 4x10^3/ml)	12	06	18
Percentage neutrophils (mean value)	53089%	58.98%	55.56%
Percentage lymphocytes (mean value)	30.80%	21.63%	27.25%
Normal HCT (=35=55)	12	05	17
Low HCT (<35)	07	07	14
High HCT (>55)	0	0	0
PLT mean value (10^3/ml)	100	142	116
Patients requiring platelet transfusions	06	08	14
Patients managed in outpatient / emergency	06	01	07
Patients needing admissions	13	11	24
Mean length of inpatient hospital stay (days)	5.9 (4.1)	9.7 (10.8)	7.7 (8.0)

WBC: White blood count, HCT: Hematocrit, PLT: Platelets

developed concomitant neutropenic fever. Only one of these five patients developed severe dengue infection. One another patient who did not receive chemotherapy also developed concomitant neutropenic fever with severe dengue. All patients with neutropenic fever recovered from dengue infection.

Discussion

Owing to scarce data in the form of case series or case reports of dengue infection in cancer patients and non-availability of any original article even as a descriptive study in the English literature that could specifically deal with the clinical and biochemical features of dengue infection in cancer patients we faced difficulty in building the discussion portion of study. Although direct comparison of our study with other studies is not possible due to above mentioned reason, where appropriate, we have mentioned the important findings from our purely cancer population focused study and same data from different local and international studies that mainly focus on general population group. We had almost equal gender distributions (**Table-1**) while other studies from Pakistan showed a male predominance. [12,13] We also had mixed population of both children and adult patients and almost three fourth (74.2%) of our patients were adult. This distribution is similar to the age pattern observed in a retrospective cross sectional study in Pakistan that extended over 5 years from 2003 till 2007. [13] Apart from the above mentioned reference most other studies in general population from regional countries have either been conducted on children or adults making estimate and comparison of distribution of dengue infection in different age groups difficult with reference to our study. [14,15] According to Ooi et al advancing age has a protective role in terms of morbidity up to a certain age limit and the likelihood of a dengue infection resulting in dengue haemorrhagic fever decreases when the infection shifts from childhood to young adulthood. [16] This effect, however, was not observed in our study where we found an almost equal proportion of severe dengue (SD) infection in adult (9/23) and non-adult cancer patients (3/8) but that could be attributed primarily to the difference in frequencies of different cancers in different age groups. This picture is further confounded by the fact that all cancer patients seen in this cancer hospital are not the true representative of the real distribution of different cancers with regard to different age categories in Pakistan yet this hospital caters the major burden of country's cancer patients. Another important finding was higher mean age of 43.7 (23.8) years in severe dengue (SD) group as compared to non-severe dengue (NSD) group i.e. 36.0 (22.2) years. This could have been partly due to the fact that our cancer patients' mean age of 39.0 (22.8) years was even higher than that observed in other regional and international studies. [13,14,17] Similarly a relatively greater number of comorbid conditions were seen in severe dengue (SD) group (29%) as compared to those in non-severe dengue (NSD) group i.e. 16% (**Table-1**). Whether these factors of higher mean age and comorbid conditions have a direct impact on prediction of dengue severity cannot be determined based on current study design but these can become good parameters for future studies.

The peak timing of the presentation and the distribution of cases in one calendar year in our study was similar to the recent trend of dengue fever in the region confirmed by a local study showing data from 2003 to 2007. [13] Most of the cancer patients (80.6%) reported within first three days of their illness. This finding probably is attributable to some extent to the relatively heightened awareness in recent years about dengue by media as well by the fact that cancer patients might be relatively more sensitized in their health seeking behaviour. [14]

Fever and body aches being the two major symptoms (**Table-3**) were seen in 100% and 58.1% cases relatively and these findings were also consistent with most other studies. [12,17,18,19] Similarly the risk of bleed in our study was seen more in adult patients (8 out of 11 patients with mucosal bleed and 4 out of 4 with severe bleed were adults) that was also observed by another large cohort on children and adults. [20] On the other hand we observed a relatively lower frequency of skin rash (6.5%) and vomiting (29%) in cancer patients (**Table-3**) as compared to the studies on general population. [12,18,20] The frequency of diarrhoea (25.8%) was relatively higher than reported by a study by Hammond SN et al. [19] Amongst laboratory parameters (**Table-4**), we found A clear association of different haematology parameters with the severity of dengue infection. Relatively severe leukopenia and thrombocytopenia was observed in non-severe dengue (NSD) group and was also observed in a study by Khan et al. [13] Moreover, in our study, the mean value of thrombocytopenia (30.13x10^9/L) in adults was lower as compared to that of non-adults (74.07x10^9/L). Similar finding was also observed by Trung et al. [20] We further noted relatively longer average length of hospital stay of our patients as

compared to the observations made by Trung et al.[20] We observed a broad spectrum of clinical presentations of dengue infection ranging from 38.7% of non- severe dengue without warning signs (NSD-) to 22.6% of non-severe dengue with warning signs (NSD+) and then to 38.7% with severe dengue (SD) infection (**Figure 1**) showing equal distribution of mild and severe cases on either end of the clinical spectrum. This distribution is different from the clinical spectrum observed in general population where relatively smaller fraction suffered from severe dengue (SD) and majority of patients had non-severe dengue with warning signs (NSD+).[21]

There are variable reports on the severity of dengue infection when compared with other immune-compromised groups possibly representing a different mechanism specific to each group. For example, according to a case series by Prasad et al, out of eight renal allograft recipients with dengue infection three patients developed haemorrhagic shock syndrome and died.[22] On the other hand dengue infection in HIV (Human Immunodeficiency Virus) patients was not reported to be associated with severe disease based on available small body of literature. According to a case report and a series of two HIV infected patients who acquired dengue infection had a benign course and their CD4 counts remained normal with no progression of HIV disease that might be indicating relatively little immune suppression.[23,24] Based on the fact that HIV infection weakens immune system by decreasing naïve and memory CD4 T lymphocytes and the fact that these cells are activated more in dengue haemorrhagic fever as compared to milder infections depict that possibly these interactions may be responsible for a fewer cases of dengue haemorrhagic fever in HIV co-infected patients.[25,26] Similarly in our study from the subgroup of haematological malignancies (n=10) with possible secondary defects in B and T cell functions only two patients (20%) developed severe dengue (SD) infection while from the subgroup of non-hematologic malignancies (n=21), severe dengue (SD) infection developed in ten patients (47.6%). The difference observed in dengue severity between the two subgroups might be related to the similar mechanism as is suggested in HIV patients with dengue infection above.

Neutropenic fever that was only seen in a small group of patients (n=6) where most of these (5 out of 6) also received chemotherapy further confounded the situation that whether it was purely chemotherapy or dengue virus related or the combination of both. Anyhow this finding played a protective role in the sense that all of these 6 patients have had full recovery. The authors think that the small size of neutropenic patients is the hindrance to draw any conclusion right now and will need further future studies for this association. Anyhow, by considering this finding along with the two another observations in the study i.e. (1) relatively more intense leukopenia in non-severe dengue (NSD) patients and (2) less severe disease in hematologic cancer patients highlights the pivotal role of immunity (especially cellular immunity) in the determination of severity of dengue infection that may be area of interest in further studies . The authors also suggest that other possible risk factors that may be taken into account for the future studies are the relation of primary cancer related immune depression, relatively elder age pattern and more comorbid conditions with the severity of dengue infection; the last two risk factors were seen more in severe dengue (SD) patients group (**Table 1**).

Although the only serological test available to prove dengue infection apart from clinical criteria at the time of study was dengue IgM serology and this also complies with the definition set by WHO / TDR group, yet, we could not differentiate between primary and secondary dengue infection because IgG serologies were not done in all patients. Furthermore, other confirmatory tests like NS1 (non-structural protein 1) antigen or dengue RT-PCR (reverse transcriptase polymerase chain reaction) were not available at the time of study. This study being purely descriptive with the lack of a control group (dengue fever in non-cancer patients) makes it difficult to know whether dengue is more severe in cancer patients or not.

To our knowledge so far there is no similar study published in the English literature thus this will be the first one with comprehensive description of clinical and laboratory behaviour of dengue infection amongst cancer patients from Pakistan. Based on some preliminary findings in the study suggesting possible role of cellular immunity in the determination of dengue infection severity will be a good variable to study in future research on this particular topic. Hence this study can work as a reference plate form in helping design future research work. Considering above limitations and strengths of the study, the authors suggest further future studies with a bigger sample size, well-designed format; choosing more homogenous cancer patients with complete clinical and laboratory follow up and the use

Of confirmatory tests for dengue infection. This would help in further elaboration of clinical and biochemical behaviour of dengue infection in cancer patients.

Conclusion

In conclusion, our study despite being a small sized descriptive one, that was carried out on cancer patients only, appears to have a different spectrum of dengue infection severities as compared to general population. Severe dengue infection was more common in patients with solid organ cancers compared with hematologic cancers, highlighting a possible role of cellular immunity in dengue severity determination. Those at risk of severe infection were also relatively elder and had more co-morbid conditions.

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Case Series

En Block Excision and Iliaccrest autograft Intepositional Arthrodesis for Giant Cell Tumour of Distal Radius: (Campanacci Grade-III)

Ali Raza Hashmi, Khawar Tufail, Sohail Razaq, Dilawaiz Nadeem, Khalid Tanveer Ahmad and Mohammed Jazib Nadeem

Objective: To study wide resection and arthrodesis of wrist, utilizing an autologous iliac crest for giant cell tumour of distal radius (Campanacci Grade-III).

Material and Methods: Between Feb 2004 to Nov 2011 ,fourteen patients with amean age of 31.5 years(21-42 years) with Campanacci Grade-III GCT of distal radius were admitted in orthopaedic ward Services hospital Lahore. Thirteen patients were managed with wide excision of tumour and reconstruction with ipsilateral iliac crest, fixed with small fragment plate to the remnant of radius. Primary autogenous iliac crest grafting was done at iliac crest radial junction in all the patients.

Results: All the patients were followed to bony union, and twelve out of 14 patients were available at mean follow up of 24 months (10 to 26).The mean time to union was four months (3.0 to 6.0) at iliac crest-carpal site and 4.5 months(3.0 to 6.60) at iliac crest- radial site. Eleven patients had a reasonably good range of supination and pronation. The mean Musculoskeletal Tumour Society score was 23.21(77.38%, range21 to 25). Among the complications, two patients developed radioulnar synostosis, one patient had a local recurrence, but with no bony involvement. Local excision was done and no local recurrence took place thereafter and he is disease free. One patient developed stiffness of fingers, which improved with physiotherapy. There was no other complications like nonunion at the graft bone junction, wound infection (superficial or deep), skin necrosis deformity and bony metastasis and refracture at the reconstruction site.

Conclusions: Iliac crest provides a local corticocancellous bone graft to reconstruct the defect left after excision of the distal radius for giant cell tumour. Iliac crest graft has advantage over the fibular and ulna graft of having the early union and better incorporation to the host bone, with no evidence of nonunion in our studies. It provides good stability at wrist with contouring of DCP over its concave surface, while retaining a good function of hand and forearm rotation.

Keywords: Giant cell tumour, iliac crest graft, radius.

Introduction

Giant cell tumour (GCT) of bone is a benign but locally aggressive tumor with a tendency for local recurrence.[1] The distal end of radius is the most common site for a giant- cell tumour with almost 10% occurring at this site. The aims of treatment are complete removal of tumour while preserving the maximum function of the limb. In most cases this can be achieved by curettage and by packing the cavity with bone graft or methyl methacrylate cement. Curettage and bone grafting alone has been associated with high local recurrence rate of 27% to 54%.[2-5] In cases in which the tumour has broken through the cortex(Campanacci grade-III) **Fig2**,[4] has grown rapidly **(Fig1)**, or when there is local recurrence with large soft tissue component, the distal end of radius has to be resected and reconstructed.[6-11] This can be achieved either by arthroplasty or arthrodesis using vascularized or non- vascularized auto grafts from the tibia, proximal fibula, iliac crest or distal ulna.[12-17] Other procedures include the use of an osteoarticular allograft, transposition of the carpus on to the distal part of ulna to create a one-bone forearm or a custom made prosthesis.[9,16,17]

Material and Methos

The purpose of this study is to evaluate the result of GCT of the distal radius (Campanacci grade 111) treated by en-block resection and arthrodesis using autogenous iliac crest. We examined the complications of the technique, the time taken to union and functional outcome. Radiological features characteristic of GCT on roentgenogram, and MRI and confirmation by open biopsy. The cases included in our study were primarily treated in our institute except one case, and have been followed up for minimum of two years.

Material and Methods

Between Feb 2004 to Nov 2011, fourteen patients with a mean age of 31.5 years(21-42 years) with Campanacci Grade-III GCT of distal radius were admitted in orthopaedic ward Services hospital Lahore, thirteen patients were managed with wide excision of tumour and wrist arthrodesis with ipsilateral iliac crest, fixed with small fragment plate to the remnant of radius proximally and carpal bones and third metacarpal distally.

All patients medical records, imaging and functional status werereviewed. There were five men and nine women with a mean age of 31.5 years (21.0 to 42.0). All were right-handed. The right radius was affected in nine patients and the left in five.

The mean duration of symptoms in all patients except one, before presentationwas 3.6 months (2.0 to 6.0).An open tissue diagnosis was obtained for all the primary tumours.

Imaging studies included plain radiography, MRI of the wrist and chest radiography. Radiological grading of the lesion was done as per Campanacci grading4 MRI was used to evaluate the extent ofthe lesion, its extra- osseous component, its relation to the neurovascular bundle and to place the level of transection of the bone.

Operative Technique

Using dorsal approach, the radial lesion was excised en bloc with the surrounding soft tissue and pronator quadratus muscle in order to avoid contamination of the remaining tissue with tumour **(Fig3).** Five to eleven cm of distal radius was excised along with the tumour as safe margin in all the cases. The mean length of bone resected was 6.9 cm (5 to 11cm).

Distal 2.5 to 3 cm of ulna was also excised to avoid creation of distal radio-ulanar synostosis. Care was taken to preserve the neurovascular bundle while resecting the tumour mass from the surrounding soft tissues.

Reconstruction of the bone defect was done using ipsilateral iliac crest of appropriate size. Iliac crest was further secured by passing a longitudinal K wire throughit. Iliac crest graft was aligned with the radius and the second or third metacarpal and then internally fixed with a small DCP. **(Fig-4)** We made sure to keep the wrist joint in 15 to 20 degree of dorsiflexion to achieve the optimal function of hand. All patients had a below-elbow splint for six weeks. Active shoulder, elbow and fingers range of motion exercises were encouraged in the immediatepost-operative period.

The patients were seen every three months for the first year and every six months thereafter. Radiographs of the wrist were assessed at each visit. A chest radiographwas evaluated every six months for evidence of metastases.

The functional status was determined at the final follow-up using the Musculoskeletal Tumor Society scoring system.[12] This was based on the analysis of three factors of pain, functional activities and emotional acceptance, pertinent to the patient as a whole, and three specific to the upper limb namely positioning of the hand, manual dexterity and lifting ability. For each of the six factors, values of 0 to 5 were assigned based on established criteria.

The functional score is expressed in percentage of actual points scored out of the total 30. All the patients were followed to bony union, and (12)patients were available at mean follow up of 24 months.[13-27]

Figure-2: Pre-opAp and Lat radiographs of GCT involving distal radius (campanacci grade-III)

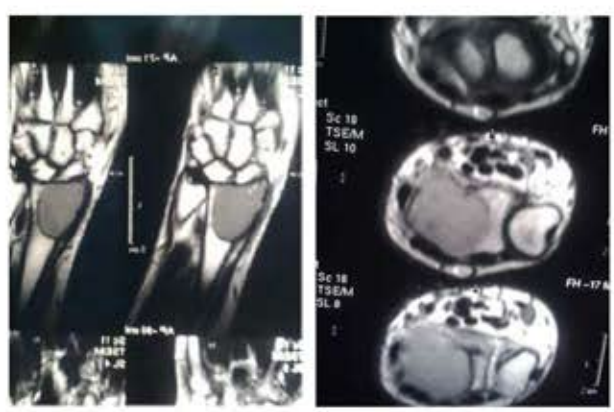

Figure-2: Pre- operative MRI of distal Radius and ulna.

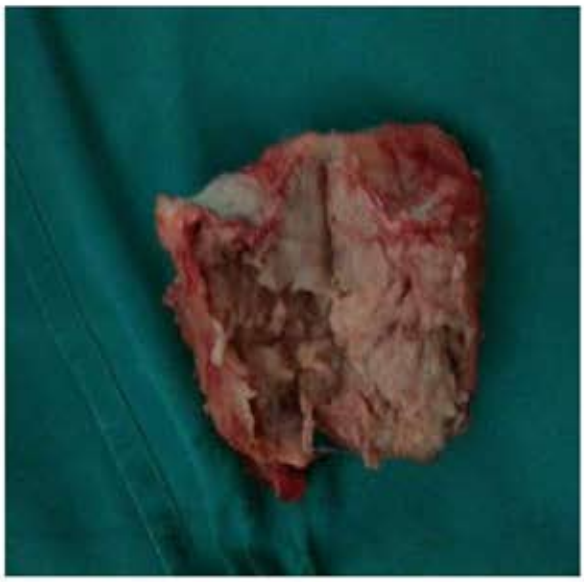

Figure-3: En- Block resection of distal radius for GCT.

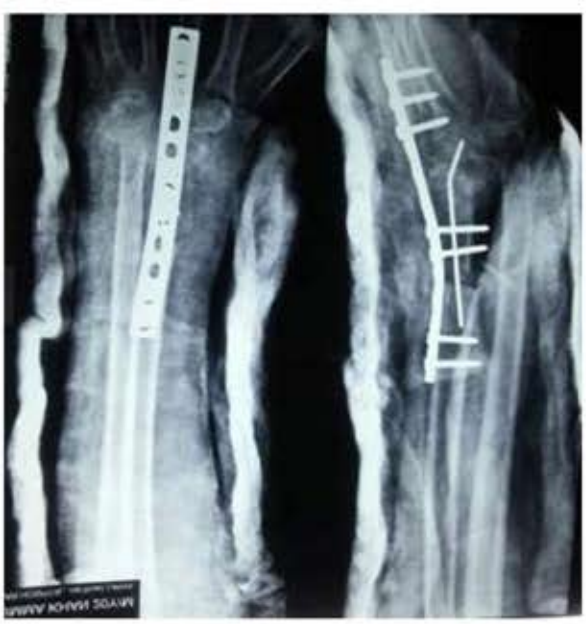

Figure-4: Post- Operative AP and Lat Radiographs of wrist showing Wrist Arthrodesis and fixation with small DCP.

Results

All 14 patients were followed to bony union.and (12)patients were available at mean follow up of 24 months(13 to 27).The mean time to radiological union was 4 months (3.0 to 6.0) at the iliac crest-carpal junction and 4.5 months (3.0 to 6.6)at the iliac crest-radial junction. No patient required an additional procedure to augment union. Eleven

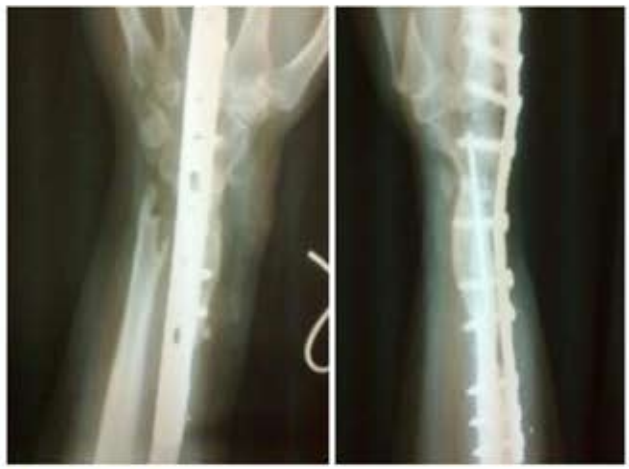

Figure-5: X-Rays of distal radius and ulna after incorporation of iliac crest graft and bony union .

patients had reasonable pronation and supination. Three patients had no rotation of the forearm. Two out of these three patients, developed a distal radio-ulnar synostosis due to inadequate removal of distal ulna. This complication was seen in early part of the learning curve. Third patient with no rotation of forearm was the one, operated elsewhere and he presented with wrist dislocation following en-block resection/ reconstruction with interpositional custom made arthroplasty for GCT of distal radius. Redo surgery with centralizing the ulna on carpus to make it one- bone forearm was performed, since the gap left

Table-1: Results of 14 patients. (En-Block Resection of distal radius GCT (Campanacci Grade -3)and wrist Arthrodesis with Iliac crest).

No of Cases	14
Mean age gender	31.5y (21.0 to 42.0)
Gender	5M - 9F
Mean duration of symptoms	3.6M(2 to 6 months)
Average presected lenght	6.9 cm(5 to 11)
Fixation	Mini Dcp 3.5
Mean Time to union	Iliac Crest-Carpel 4m (3.0 to 6.0)
	Iliac Crest-radial 4.5m(3.0 to 6.6)
Complications	Distal radio ulnar synostosis = 2
	Recurrence = 1
	Finger Stiffness = 1
Mean Follow up	24m(13 to 27)
Mean MSTS score	23.21(77.38%,range 21 to 25)

after the resection of radius was quite big 16cm, and it was not suitable for iliac crest reconstruction. The mean Musculoskeletal Tumor Society score was23.21(77.38%, range21 to 25).One patients had a local soft-tissue recurrence with no bony involvement.The recurrences were excised and patient was disease free at the final follow up. One patient developed stiffness of fingers, which improved with physiotherapy. There was no other complications like nonunion at the graft bone junction, wound infection (superficial or deep), skin necrosis deformity and bony metastasis, re-fracture at the reconstruction site. Results are summarized.

Discussion

GCT of the distal radius is a condition which allows excision of the tumour while preserving excellent function of the wrist and hand. While excision may not be mandatory in every case it has been suggested that this rather than intralesional curettage may be preferred to reduce the incidence of local recurrence, particularly if the tumour has breached the cortex, violated the articular surface or destroyed more than half of the surrounding metaphysis.[23]

Reconstruction after excision of the distal radius for GCT is a challenge because of the high functional demands on the hand, the limited surrounding soft tissue, the proximity of adjacent nerves and tendons and the young age and relatively long life expectancy of this group of patients.[8] Various factors need to be considered when evaluating a technique of reconstruction. These include the ease of the procedure, its morbidity, the complications and functional outcome and the durability of the reconstructed segment. The use of an avascular strut autograft is often limited by the long length of the resection gap and by donor-site morbidity. When the upper fibula is used there is a risk of persistent pain in the leg, laxity of the lateral ligament at the knee, palsy of the peroneal nerve and dysaesthesia in the back of the leg.[13] Strut allografts, although a useful option, are limited by their availability and are associated with nonunion, fracture, infection and the fear of transmission of disease.[8,24] The use of custom-made endoprostheses for tumours of the distal radius is limited.[16,27] Whether vascularised or non-vascularized bone grafts are used, defects of the distal radius can be reconstructed either by arthroplasty or arthrodesis. Various authors have reported that for extraosseous GCTs in this region, the best clinical results are seen in patients who have been treated by radio- carpalarthrodesis.[5,14,23,24,26] Ipsilateral or contralateral iliac crest graft for wrist arthrodesis is an easy, inexpensive technique which does not require micro vascular skills. It is also quicker to perform than free vascularized fibular grafting. Since the surgical procedure is restricted to the same limb and iliac crest region morbidity is reduced as compared to when non vascularised fibula is used. The shorter surgical procedure and the fact that a graft which retains its osteoinductive and osteoconductive properties has been used possibly help promote the early union at the graft host site, which is quicker than that of a non-vascularized graft.[5,23,26,27] This technique retains forearm rotation . This is not possible when the ulna is fused directly to the carpus.[18] which causes considerable functional difficulty. Unlike Chalidis and Dimitriou,[15] we do not advocate routinetenodesis of the extensor or flexor carpi ulnaris since we have not found that there is any cosmetic or functional disturbance.

We routinely use plates and screws to stabilize the construct since this gives better fixation and provides a better biological and mechanical environment for bony union.[18,27] This is probably why no additional procedures were needed to promote union. The stable fixation also enabled us to use a below-elbow splint which allowed early active movement of the shoulder, elbow and fingers.

The incidence of local recurrence in our series of 7.1% is in keeping with that described in the literature for Campanacci grade-3 GCTs of the distal radius.(7)The limitations in our study was that if defect leftafter excision of distal radius is > than 14 cm, iliac crestauto- graft is not suitable option for wrist arthrodesis.

Conclusion

Wrist arthrodesis using iliac crest autologous graft is an easy, inexpensive method of reconstructing the distal end of the radius after excision for a GCT. It avoids the need for a micro vascular procedure and gives reasonable rotation of the forearm while maintaining a good stability at wrist and maintaining a good hand function. Wrist arthrodesis has an advantage, in most of our patients belonging to average income group, over wrist arthroplasty that patients can perform manual labor, weight lifting and other activities of daily living to their satisfaction.

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Case Report

Cystic Adenomatoid Malformation in a Young Male Adult With Recurrent Respiratory tract Infections

Khalid Rehman Yousaf, Salman Atiq, Tahir Abbas, Nadeem M. Butt, Nasir Qadir and Maaz Iqbal

Abstract: We present a case of 26-year-old male with congenital cystic adenomatoid malformation. His medical history started after birth as recurrent respiratory tract infections and breathlessness during his infancy which persisted even after continued medical treatment. Cystic bronchiectasis of right lower lobe was suspected. On cross-sectional imaging at our hospital, congenital cystic adenomatoid malformation of right lower lobe was diagnosed. The clinical features, radiological characteristics, differential diagnosis and prognosis of the disease are discussed.

Introduction

Cystic disease of the lung, in various forms, has been well-described for over a century. Congenital cystic adenomatoid malformation (CCAM) of the lung was recognized as a distinct entity of cystic lung disease by Staerk in 1897,[1] but remains a rare disorder. It is considered a developmental disorder and most of the cases reported have been described in premature or stillborn infants.[1-4] This disorder has also been described in older children and, rarely, in adults in whom the disease has been localized to one lobe or at most one lung.[5-12]

History

A 26 years old young shopkeeper presented to our hospital in December 2012 with complaints of recurrent respiratory tract infections and occasional breathless in association. His chronic cough was productive of greenish sputum along intermittent pleuritic chest pain. No obvious triggering factors for his respiratory symptoms were found. He had a good appetite, and no progressive weight loss or any other significant systemic symptoms, such as fever associated with night sweats. He was a non-smoker and non-alcoholic. There was neither a history of atopy nor a familial history of respiratory disease. There was no history of significant dust or chemical exposure in his workplace.

On physical examination, he was a heavy built male besides normal vitals; His chest was normal on inspection, but revealed prominent inspiratory and expiratory wheezing over right lower chest. The apex beat was palpable and the heart sounds were normal. The examination of central nervous, cardiovascular as well as gastrointestinal system was unremarkable.

Preliminary clinical diagnosis was cystic bronchiectasis. Patient underwent radiological imaging through plain X-ray followed by cross-sectional imaging as a part of work up to confirm diagnosis.

A frontal chest radiograph showed multi-cystic change in the right lower zone besides normal cardiac size and contour. The multiple cysts were thin walled without any obvious air-fluid levels. Right upper as

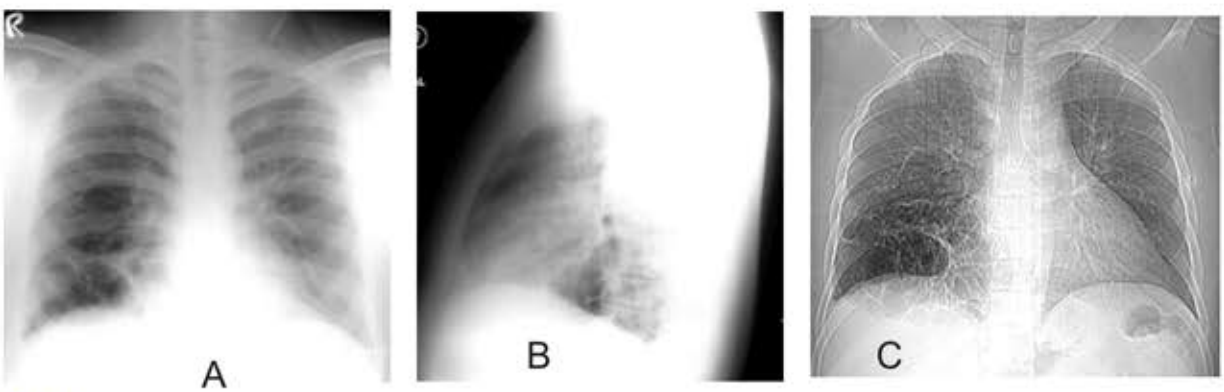

Fig-1: A frontal (a) and lateral (c) chest radiographs along with scanogram (c) showing thin walled multicystic changes in the right lower lobe (blue and white arrows) without any obvious air-fluid levels. Note that right upper as well as left hemithoraces are unremarkable for any obvious pathology.

well as left hemithoraces were unremarkable for any obvious pathological pattern. Both costo-phrenic angles were clearly outlined. Lateral chest projection confirmed the cystic changes in the right lower lobe being confined to the retrocardiac region.

High resolution computed tomography (HRCT) of the lung was ordered as a next modality for investigation. The patient was scanned from the lung apices down to the lung bases with 2 mm high resolution slices. The bronchi throughout right lower lobe showed an unusual, dilated, variable sized cystic appearance extending all the way to the periphery. These multiple cysts were thin walled without any significant intra-cystic fluid. No lung parenchyma was appreciated in the right lower lobe, however, right middle and upper lobes as well as left lung revealed normally aerated lung parenchyma. The trachea, main bronchi and cardiomediastinum were centered normally with normal anteroposterior diameter of chest.

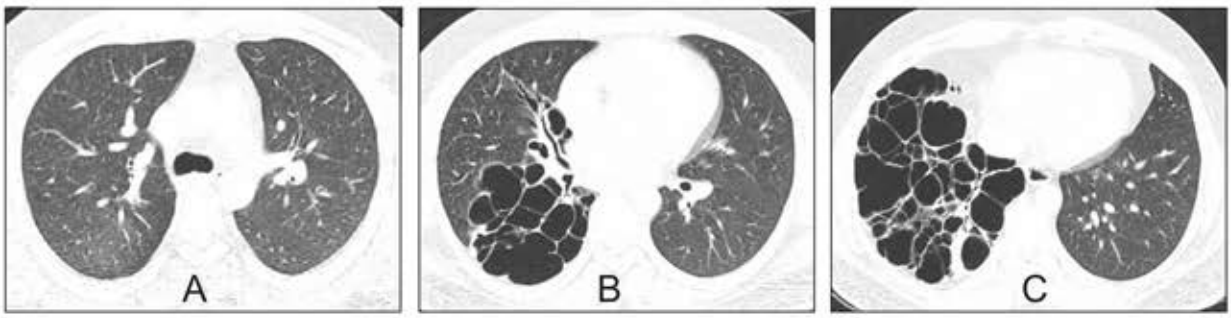

Fig-2: Axial HRCT cuts at the level of carina (a), left pulmonary trunk (b), and left ventricle (c) showing thin walled multiple cysts only involving right lower lobe. Note that right upper lobe (a) is completely spared.

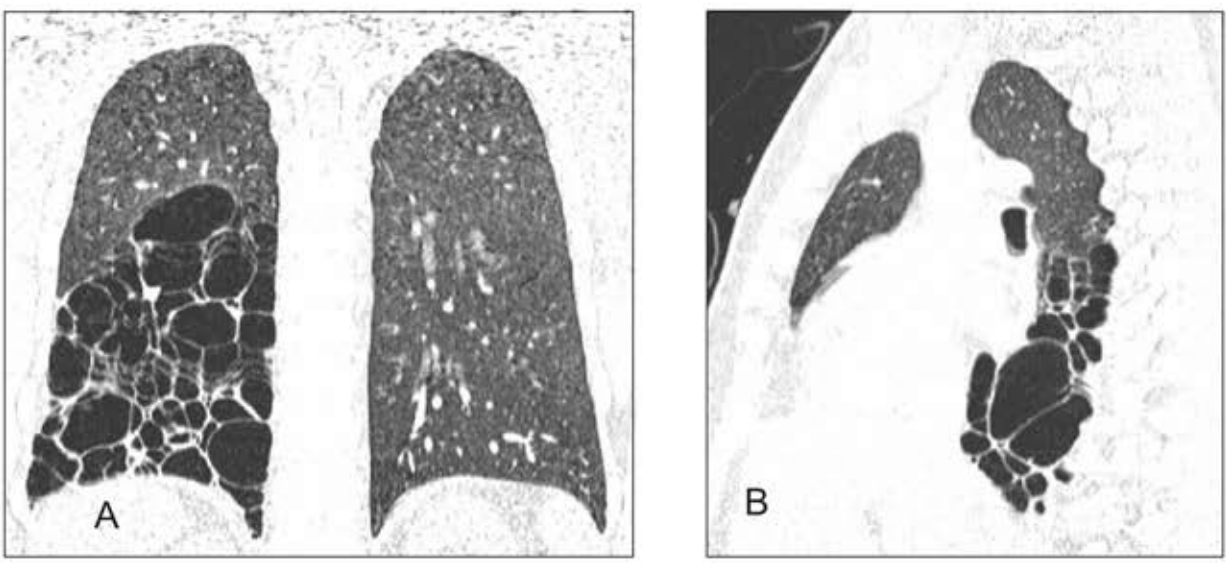

Fig-3: Coronal (a) and sagittal (b) reformatted HRCT cuts confirming multi-cysts only involving right lower lobe. Note that right upper lobe and apex is completely well preserved.

Features demonstrated by HRCT were considered compatible with a diagnosis of type I congenital cystic adenomatoid malformation (CCAM Type-I).

Discussion

Cystic lung disease in adults broadly included bronchiectasis, post-inflammatory pneumatoceles, bullous disease and cavitating lung infection. Congenital lesions, such as sequestration, bronchopulmonary- foregut anomalies and bronchogenic cysts are also encountered.[7]

The characteristic features of CCAM include "adenomatoid" increase of terminal respiratory structures, manifested by various-sized cysts, variably lined by cuboidal to ciliated pseudostratified columnar (bronchial type) epithelium or a single-layered cuboidal epithelium; polypoid configuration of the mucosa and increased amounts of elastic tissue

In the walls of the cystic portions, lined with bronchial-type epithelium; absence of cartilaginous plates in the cystic parenchyma, except as constituents of nondeformed bronchial structures entrapped within the diseased lung; the presence of a group of mucogenic cells lining the cyst wall or alveolar-like structures; and absence of inflammation.

On rare occasions, cystic dilatation and polypoid formation may be absent, adenomatoid structure being the only feature of the malformation.[2] Another rare variant is characterized by abundant cartilage on the walls of malformed bronchioles.[11]

CCAM is classified into three main types-3. Type I is composed of a single or number of large cysts with smooth muscle and elastic tissue wall; size of the cysts bein more than 20 mm. Type II variants contain numerous smaller cysts (<10 mm in diameter), with a thin muscular coat beneath the ciliated columnar epithelium; the area between the cyst is occupied by large alveolar-like structures; the lesion blends with the normal parenchyma. Type III variants occupy the entire lobe or lobes and are composed of regularly spaced bronchiole-like structures, separated by masses of cuboidal epithelium-lined alveolar-like structures. CCAM has been associated with various other congenital abnormalities, including renal agenesis, Potters' syndrome, polyhydramnios,[13] and bile duct hypoplasia.[14]

Adult cases have been diagnosed incidentally, presenting as cystic lesions on chest radiographs 10, 15. Cases have also been recognized after presenting with recurrent infection[5,11] pneumothoraces,[16] haemoptysis,[17] mycetoma,[16] and bronchioloalveolar carcinoma.[18,19]

Our report emphasizes the importance of HRCT with cystic disease, as the pathognomonic cystic bronchial wall abnormalities were not readily apparent from the plain radiograph. Due to the paucity of adult cases reported in the literature, it has not been possible to formulate any treatment guidelines. However, the appropriate treatment of complicating lower respiratory tract infection constitutes primary therapy. Lobectomy should be considered for localized disease associated with recurrent infection and haemoptysis, but it can also be recommended that this procedure should be undertaken in asymptomatic patients in view of the relatively high incidence of malignant change, as reported previously.[18,19]

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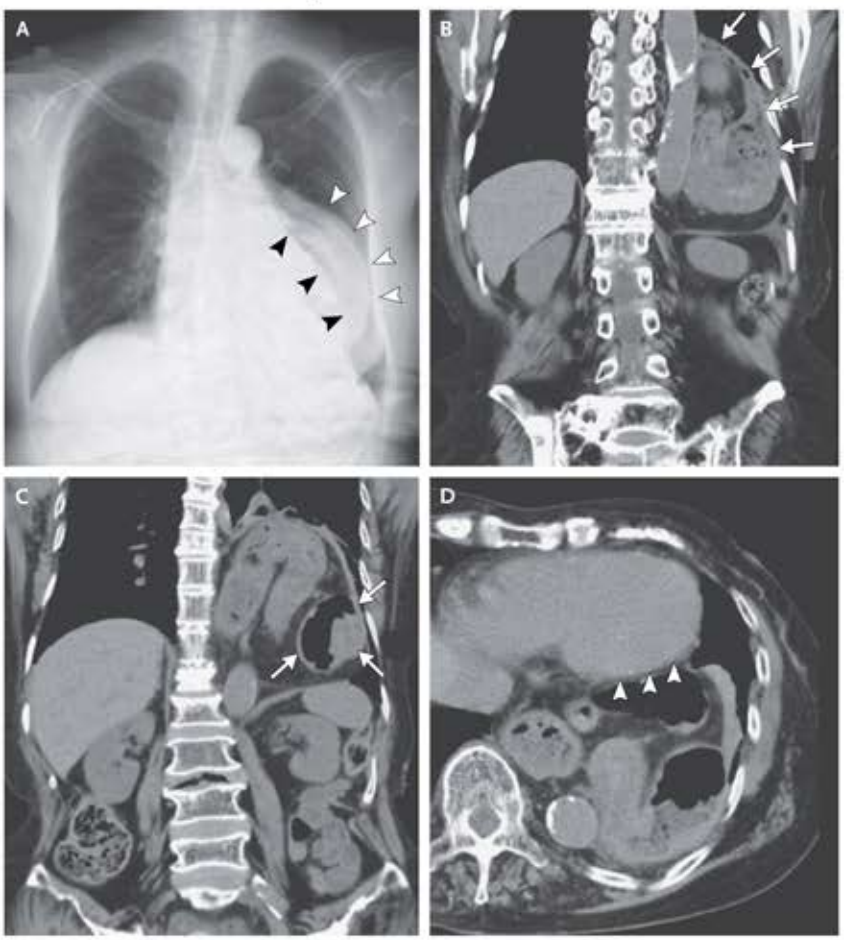
Answer of Picture Quiz

Palpitations after Dinner



A 76-year-old woman with rheumatoid arthritis, diabetes mellitus, and hypertension presented with a 1-month history of palpitations that occurred only after she had eaten dinner. The sensation was felt at the center of the chest and lasted for 10 to 15 minutes after the meal. An electrocardiogram was unremarkable.

A chest radiograph (Panel A) showed a mediastinal shadow (white arrowheads) lateral to the left heart border (black arrowheads). Computed tomography of the chest revealed a left diaphragmatic hernia (Panel B), with the stomach positioned in the thorax (Panel C, coronal view), abutting the left ventricle (Panel D, axial view, arrowheads).

The stomach was visibly twisted, a finding consistent with a gastric volvulus. Gastric endoscopy revealed a volvulus, with twisting of the mucosa. After surgical repair of the hernia and volvulus, the palpitations resolved, and

at follow-up more than 1 year after surgery, the patient remained free of symptoms.

E-Cigarettes 'Much Less Addictive, Toxic' Than Conventional Cigarettes

Are e-cigarettes effective as a smoking cessation aid? This is a controversial question. Some studies claim the devices help smokers quit, while others suggest e-cigarettes may encourage tobacco smoking and may even be a gateway to illicit drug use. A new study adds to the debate, suggesting that e-cigarettes are much less addictive than conventional cigarettes.

The research team - including Jonathan Foulds, professor of public health sciences and psychiatry at the College of Medicine at Pennsylvania State University - publish their findings in the journal Nicotine & Tobacco Research.

The use of e-cigarettes (electronic cigarettes) has increased dramatically in recent years, and their popularity continues to grow. A 2013 study from the Centers for Disease Control and Prevention (CDC) found that among American middle and high school students alone, e-cigarette use doubled between 2011 and 2012. There are now more than 400 brands of e-cigarettes on the market. Most of these contain nicotine, propylene, glycol, glycerine and flavorings, which are delivered to the user through inhaled vapor. But Prof. Foulds and colleagues note that it remains unclear as to how e-cigarette use influences nicotine dependence. E-cigarettes 'seem to have advantages' for health to find out, the team created a 158-item online survey that was targeted toward 3,609 former cigarette smokers who now use e-cigarettes.

As part of the survey, participants completed the 10-item Penn state Cigarette Dependence Index and the 10-item Penn State Electronic Cigarette Dependence Index, which included questions designed to assess participants' previous dependence on conventional cigarettes and current dependence on e-cigarettes.

Overall, participants reported having much lower dependence on e-cigarettes than on conventional cigarettes, although the researchers note that those who used an e-cigarette liquid with a higher nicotine concentration and those who had used e-cigarettes for longer periods had higher dependence on the devices.

"However," Prof. Foulds adds, "people with all the characteristics of a more dependent e-cigarette user still had a lower e-cigarette dependence score than their cigarette dependence score. We think this is because they're getting less nicotine from the e-cigarettes than they were getting from cigarettes."

The researchers point out that the long-term health effects of e-cigarette use is unknown, but they say their study shows the devices may have benefits. Prof. Foulds adds:

"We don't have long-term health data of e-cigarette use yet, but any common sense analysis says that e-cigarettes are much less toxic. And our paper shows that they appear to be much less addictive, as well. So in both measures they seem to have advantages when you're concerned about health."

A 'need for a better understanding' of e-cigarettes

The team notes, however, that although may users of e-cigarettes are using the devices in an attempt to quit smoking, they have not been regulated by the Food and Drug Administration (FDA) for this purpose.

What is more, they stress that it is possible the devices may pose long-term health risks, as not enough is known about their safety.

"This is a new class of products that's not yet regulated," says Prof. Foulds. "It has the potential to do good and help a lot of people quit, but it also has the potential to do harm. Continuing to smoke and use e-cigarettes may not reduce health risks. Kids who have never smoked might begin nicotine addiction with e-cigarettes. There's a need for a better understanding of these products."

Increasingly, researchers are investigating the safety of e-cigarettes. In September, Medical News Today reported on a study claiming that secondhand smoke from e-cigarettes contains higher levels of toxic metals than secondhand smoke from conventional cigarettes.

Another study, published in The New England Journal of Medicine, suggests that the nicotine in e-cigarettes activates a gene in the brain linked to reward response, meaning the devices may be a gateway to addiction, illicit drug use and conventional smoking.

Courtesy: Medical News Today