

Case Report

LIGNOCAINE TOXICITY IN BURN CASES

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Abstract: Pain is one of the constant features of burn injuries. Many protocols are utilized to alleviate pain in these patients. Lignocaine containing ointment and fusidic acid in combination with hydrocortisone cream are routinely used as topical application in the wound care of burn patients at our setup. During a period of nine years, five patients experienced adverse effects of lignocaine, active ingredient of Ointment, which were immediately controlled once this drug was discontinued. All these patients, who were being treated for burn injury involving more than 20% BSA (Body Surface Area), responded well on excluding the lignocaine from treatment medication and did not require any anticonvulsant to treat these adverse effects.

Key words: Burns, toxicity, lignocaine toxicity.

Introduction

Pain is a constant element of partial thickness burn injuries.¹ Initial pain is result of massive nerve stimulation in the affected area and inflammatory mediators like bradykinin, histamine, substance P in the affected area lead to continuous stimulation of nerve endings.²

Mechanical interventions in the area in the form of debridement, change of dressing, change of position, and physiotherapy cause amplification of painful and normally non painful stimuli mediated by peripheral and central mechanisms. Additional factors, such as anxiety and depression in burn cases are inevitable and further lower pain threshold. Burn dressings, along with being a barrier against infection, can provide some wound relief. Honey has been described to reduce the element of pain when used as a dressing.³ Commercially available dressings like hydrocolloids, calcium alginate and semi synthetic skin substitutes also definitely reduce pain.⁴ Although intravenous narcotics remain main analgesic element, we have been using a combination of cream (containing fusidic acid and hydrocortisone acetate, available by different names) and an ointment (containing neomycin, zinc bacitracin, polymyxin B sulphate and lignocaine also available in the market with registered name) to dress the burn wounds. Whereas, the hydrocortisone content of the cream is classified as a mild corticosteroid and helps decrease the inflammatory response in the skin, ointment has a combination of three antibiotics and the lignocaine content acts as a topical anaesthetic agent. Combination of cream and ointment also helps this application to stay longer on the surface which would be difficult if only cream and gel form of the products are utilized. This combination not only helps reduce the element of pain and thus use of narcotic analgesics, but also

helps granulation and epithelialization of the area smoothly and rapidly due to its decreased inflammatory response. This paper details our experience with this dressing and also lignocaine toxicity in five of our cases.

Methodology

Burn cases are admitted under the care of plastic surgeon. After routine first aid and initial resuscitation measures the wound is completely examined and washed with saline and pyodine scrub. As routine the blisters are left undisturbed. As a policy, burns of the non vital areas which are less than 20% BSA surface area are treated on outdoor basis. These cases are treated at home with close follow ups. Also these patients are advised to contact on phone and daily out patients clinic in case of any query. The standard treatment, for both the indoor or outpatients, during the summer season, consists of one daily wash with pyodine scrub, and frequent applications of lignocaine containing ointment and fusidic acid and hydrocortisone cream.

The patient attendants are advised to clean any portion of the application which, in due course of time, turns yellow or changes its color, wiping it gently with antiseptic wipes, and re-applying fresh combination of ointment and cream. Most of the fresh burn cases have been treated successfully with this regimen over the past nine years. This study involved no conflict of interest and was not funded by institute, pharmaceutical or any other body. Written consent of patients was taken for treatment. During this period, however, we have come across five cases of lignocaine toxicity. These cases are being discussed individually.

Case No 1.

About two years ago, the first case of neurotoxicity was identified in a child of five years of age. This

patient had 30% BSA scalds involving both lower limbs, buttocks and lower back. On the second day, he experienced generalised fits of mild to moderate degree. He experienced fits twice after fresh application. Immediate lab tests were performed to rule out the possible cause of these fits. Case was discussed in detail with paediatrician who is a routine member of the team. After detailed history and through examination all other known causes of such fits were excluded. The only factor remained was the toxicity caused by lignocaine. Case was provisionally diagnosed as lignocaine toxicity. The application regimen was changed to an ointment not containing the said drug, and no other anticonvulsant medicine was added. Immediately after this change patient stopped having the fits which further supported provisional diagnosis. Finding made us cautious and we were on the watch-out for any such happening. Lignocaine, however, did remain the primary choice because of the local anaesthetic effect. To date five patients in total have had such fits, and all except one child had no history of any kinds of fits in the past. The one child had a history of febrile fits.

Case No 2

Second patient was again a child of five years of age with mostly second degree scalds of 30% BSA. Areas involved included back, right lower limb, and left buttock. Patient was on routine medication and local application. He experienced three fits with an interval of three hours between the fits. As we had the experience with first case, the lignocaine containing ointment was omitted from the treatment protocol and fits subsided. Rest of the course of the disease was uneventful with eventual complete recovery.

Case No 3

Third patient was a male, 28 yrs of age, with caustic burns over 45% BSA. Areas involved both lower limbs, and parts of both forearms and abdomen. He was a known drug addict. He also developed fits on third day of treatment. Lignocaine was omitted from the treatment and he did not experience any more fits.

Case 4

Fourth patient was a 58 years old female, grossly obese, with flame burns of over 60% BSA. She had involvement of front of chest and abdomen, thighs and legs, face, perineum, and parts of back of trunk

and thighs. She developed generalized fits on second day of treatment.

Case 5

Fifth patient was a 2 years old baby girl. She presented with scalds over 25% BSA involving the whole right lower limb, right buttock and right side of trunk. She developed fits on second day of treatment which disappeared after the lignocaine was removed from the medication. In all these patients, switching to a non lignocaine containing medication took care of fits.

Discussion

Burns are quite common injury in our society. Most of them are accidental, partly due to lack of caution while handling hot objects, and especially so, near children. These injuries are very painful. Prime goals to treat these injuries include alleviating pain, to stop the wound from progressing in size and depth, to hasten the granulation and restore early skin cover. Whereas the criteria for first aid, empirical use of antibiotics and pain killers are quite clear universally, different approaches exist for wound care. List of local applicants for these wounds is quite long one, starting with silver containing preparations to steroids, papaya, honey, amnion, meshed potato, synthetic and semi synthetic dressings etc.^{5,6}

Every one of these applications has its own advantages and disadvantages. Although in the initial learning curve we have regularly been using silver sulphadiazine for local application but for last nine years we have changed our wound dressing and local application protocols all together. Although role of steroids has always been controversial but, during experience of nine years, we have witnessed that it does reduce the inflammation of the area and helps in smooth and earlier granulation of the involved areas. We are treating the burn injuries with combination of fusidic acid & hydrocortisone cream and an ointment containing lignocaine with combination of antibiotics. Cream with these components is available with different names and lignocaine ointment with this combination of antibiotics is also freely available in the market. Whereas lignocaine takes good care of the element of pain, steroid element leads to healthy flat firm red granulation and has a good anti inflammatory effect too. However, present study focuses on the toxicity of lignocaine only.

Lignocaine acts as local anaesthetic agent and thus reduces the element of pain. Intravenous lignocaine has also been recommended for treating the burn pain⁷ but studies mention that it has not been

accepted widely because of the feared adverse effects which mainly include excitation of the central nervous system causing nervousness, nausea and convulsions.⁸

Literature mentions that local side effects of lignocaine include bruising and temporary sensation of stinging or burning. Similarly the symptoms of systemic toxicity may include severe numbness or tingling, dizziness and drowsiness, tinnitus (ringing in the ears), slurred speech, metallic taste in mouth, mental status change, muscle twitching and convulsions. It has also been reported to be cardio toxic.

In present series a total of five cases of one side effect i.e., generalized fits have been reported. These side effects were experienced both by males and females and both in children as well adults. However, as it is obvious, these were reported only in cases with burn injury exceeding 20% BSA. In the first case we had to rule out other causes of generalized fits and only then treatment plan was revisited but,

once happened, we were ready for any subsequent event. It is also clear that we needed to stop local application of lignocaine alone and immediately the fits stopped. No anticonvulsant medication was given in all these cases.

Based on experience gained during last nine years and witnessing the fits in five of the cases it can be safely concluded that whereas lignocaine may be used for treatment of burn wounds, one has to be very careful once the open wound area exceeds 20% of the body surface area. In case this adverse effect is observed, immediate measure to be taken is to wipe out the ointment from the wounds and immediately stop further use of this medicine, while patient is being observed conservatively. In our series we did not use any anticonvulsant to reverse the adverse effects of the medication.

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