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Osteomyelitis due to Foreign Body (Battery Cell) in Ear - A Rare Case Report

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Summary

We report a case of 10 years old male child who presented to ENT OPD with history of excessive pain in left ear following pushing button battery in ear. Otoscopic examination revealed a foreign body. X ray mastoid (lateral oblique view) was done which showed a foreign body in the left ear, which was taken out under general anaesthesia. Patient on follow up complained of excessive purulent discharge from left ear which did not respond to oral as well as topical antibiotics. Patient was again planned for examination under microscope under general anaesthesia when biopsy from necrotic bone was taken and sent for histopathological examination. Report revealed osteomyelitis, for which patient was started on rifampicin, to which he responded well.

Background

Button batteries are used to power various electronic devices such as hearing aids, watches, calculators and photographic equipment and are increasingly used in day to day life. Necrosis of mucosa in contact with a button battery is well documented.[1-3] Little is known about the damage caused to skin and bone in contact with a button battery. Button batteries lodged in the external auditory meatus cause varying degrees of skin, bone and tympanic membrane necrosis. Button batteries lodged in the ear canal provide an otological emergency. There is hardly anything reported in literature regarding osteomyelitis as complication of battery cell in ear, to the best of my knowledge.

Case presentation

A 10 year old male child presented to ENT OPD with history of excessive pain in left ear following pushing button battery in ear. The child was a full term and 33kgs on presentation.

Investigations

Otoscopic examination revealed a foreign body in the external auditory meatus with blackening of the surrounding skin. X ray mastoid (lateral oblique view) was done which revealed a radiopaque foreign body in the left ear.

Treatment

Under general anaesthesia (GA), a button battery was removed revealing a tympanic membrane perforation inferiorly. Skin surrounding the battery cell was blackened. The corroded skin and bone was removed as much as possible. Patient was started on oral antibiotics, and on antibiotic-steroid ear drops. PTA was also done which showed slight hearing loss in left ear. Patient was discharged after 1 day, and was asked to come after 3 days for follow up in ENT OPD with his histopathological report.

Outcome and Follow Up

Patient came on 4th postoperative day in ENT OPD for follow up with complaint of excessive purulent discharge from right ear which did not respond to oral as well as topical antibiotics. Patient was admitted and examination under microscope was done. Biopsy from necrotic bone was sent for histopathological examination which later revealed osteomyelitis. After histopathological report, patient was started on rifampicin to which he responded well. Patient had dry ear after 2 weeks, and it remained as such on regular follow ups. Patient was asked to come for regular follow ups during which he remained asymptomatic, and tympanic membrane appeared to be in healing phases.

Discussion

Button batteries contain a metal anode, generally zinc, and a metal oxide cathode, usually mercury oxide or silver oxide, immersed in a strong alkaline solution, commonly 45% potassium hydroxide. Button batteries cause a cumulative electrical burn by low voltage direct current passing between the anode and cathode via the tissues of the external auditory meatus. The current passage is potentiated by the high conductivity of cerumen.[4] Exudation of tissue fluids caused by a burn injury creates a moist environment. In vitro studies have shown that spontaneous leakage of electrolyte solution occurs when alkaline batteries are exposed to moisture. The leaked alkaline electrolyte solution has the ability to penetrate deeply into tissues producing a liquefying necrosis.[5] This results in dissolution of protein and collagen, saponification of lipids, dehydration of tissue cells and consequential extensive tissue damage.[6] Tissue destruction can also be caused due to pressure necrosis which can occur in any type of foreign body impacted in a given area for a prolonged period.[5]In our case the tissues involved were the tympanic membrane and the skin and bone of the external auditory meatus. Delay in the removal of a button battery, however, could potentially lead to ossicular erosion, facial nerve injury and necrosis of the medial wall of the middle ear resulting in a sensorineural deafness and damage to the vestibular labyrinth. We recommend that a button battery lodged in the external auditory meatus should be removed as a matter of urgency.

References

[1]. Fernando, P. Perforation of nasal septum due to button battery lodging in nose. Br Med J 1987, 294: 742-743.
[2]. Blatnik, D.S., Toohill, R.J. & Lehman, R.H. Fatal complication from an alkaline battery foreign body in the oesophagus. Ann Otol Rhinol Laryngol 1977, 86: 611-615.
[3]. Shabino, C.L. & Feinberg, A.N. Oesophageal perforation secondary to alkaline battery ingestion. J Am Coll Emerg Med 1979, 8: 360-362.
[4]. Capo, J.M. & Lucente, F.E. Alkaline battery foreign bodies of the ear and nose. Arch Otolarvngol Head Neck Surg 1986, 112: 562-563.
[5]. Votteler, T.P., Nash, J.C. & Rutledge, J.C. The hazards of ingested alkaline disk batteries in children. JAMA 1983, 249: 2504-2506.
[6]. Houck, J.C., DeAngelo, L. & Jacob, R.A. The dermal chemical response to alkali injury. Surgery 1962, 51: 503- 507.