

Corrosive Esophagitis with Benzalkonium Chloride in a Two Days Old Neonate

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Benzalkonium chloride (BAC) is a caustic agent which is used in farms, homes and hospitals for cleaning skin and wounds as an antiseptic solution. It may lead to digestive system injuries in case of ingestion. We present a two-days-old newborn case which was carried to the emergency unit with complaints of poor breastfeeding, uneasiness and crying for 4-6 hours. Her mom confessed that she had given a spoon of 10% BAC solution for her cough. Initial laboratory tests were in normal ranges. A gastroscopy performed in the second hour of her admission revealed an hyperemic and edematous mucosa in the middle third of esophagus and a circumferential ulceration followed in the distal portion. Hereupon, a conservative treatment for 10 days was administered and the control gastroscopy demonstrated that the damage was almost totally improved. She was the youngest case with this etiology and successfully treated with conservative approach.

Key Words: Benzalkonium chloride, Corrosive esophagitis, Neonate

INTRODUCTION

Caustic substance intake may lead to a wide variety of complications as a result of tissue and organ damages [1]. It is still an important cause of intoxication in children from families with low socio-cultural status [2]. In neonates, on the other hand, caustic substance intake is quite rare [3,4] and emanates mostly from erroneous practices of parents.

Benzalkonium chloride (BAC) is a caustic agent which is a quaternary ammonium compound. The

concentration of this substance used in farms, homes and hospitals ranges from 0.005% to 10%. Although it is consumed with a proper dilution for cleaning of skin, mucous membranes and wounds as an antiseptic, a concentration of 10% may lead to serious complications [5,6]. We would like to present a newborn case of corrosive esophagitis following a BAC intake.

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CASE REPORT

A two days old female infant born to a 28-year-old mother in the 39th gestational week after the fourth pregnancy as the fourth alive infant via normal spontaneous vaginal birth with a birthweight of 3,200 g was carried to the emergency unit with complaints of poor breastfeeding, uneasiness and crying for 4-6 hours. In physical examination, her general status was agitated with a normal appearing oropharynx and normal respiratory sounds without rales and rhonchi. No nasal flaring and intercostal retraction was observed. In cardiovascular evaluation we did not detect any murmur or additional pathologic sounds. There was no organomegaly and no abdominal discomfort despite mildly elevated intestinal sounds. Her sucking reflex was weak whereas other neonatal reflexes were active. When her mom was questioned again, it was revealed that she had given a spoon of 10% BAC solution (approximately 10-15 mL) for her cough with the intention of treatment and that she did not vomit thereafter. Blood gases and laboratory blood tests were in normal ranges. A gastroscopy performed in the second hour of her admission revealed an hyperemic and edematous mu-



Fig. 1. Circumferential mucosal ulceration in the distal third of esophagus two hours after ingestion of benzalkonium chloride.

cosa in the middle third of esophagus and a circumferential mucosal ulceration followed in the distal portion (Fig. 1). It was concordant with the grade 2B of caustic esophageal injury classification defined by Estrera et al. [7]. That's why the gastroscopy was not furthered and the procedure was discontinued to transfer the infant to the neonate intensive care unit. Her treatment included intravenous fluid, total parenteral nutrition, H2 receptor blocker and an anti-biotherapy of cefazolin sodium and amikacin sulfate for 10 days. In the gastroscopy performed on the 10th day of hospitalization, the damage on the mucosa was almost totally improved (Fig. 2). Breastfeeding was started thereafter and well tolerated. Her intravenous treatment was stopped and she was discharged to follow up in outpatient clinic.

DISCUSSION

Ingestion or aspiration of detergents, bleaching substances and disinfectants may lead to serious lung and gastrointestinal injury. Despite a wide variety of cases in childhood published, neonate cases are quite rare [1,2,5]. As the diameters of pharynx and larynx in neonates are smaller than that of the children and as their mucosa is more permeable, mortality rates are higher in this patient group [4].



Fig. 2. Recovery of ulcerated distal esophageal mucosa after 10 days of treatment.

In the acute case of corrosive ingestion, mucosal edema, ulceration, bleeding and some other lethal complications may occur, depending on chemical composition of corrosives.

Provocation of vomiting, gastric lavage and active charcoal are contraindicated as they may increase the damage. An immediate gastroscopy in first 24-48 hours is crucial for diagnosis and treatment. If suspicious lesions are observed, the procedure must be stopped abruptly without passing to the distal portion as in our case. We did not detect an early stage complication in our patient and performed a gastroscopy on the day of admission.

BAC was formerly used in low concentrations for oral candidiasis; however it is replaced by nistatine treatment [8]. Depending on the amount of BAC contacted, burns ranging from mild to severe may occur on lips, tongue, pharynx, hypopharynx, larynx, esophagus and stomach. Clinical presentation of these cases may be accompanied by hypersalivation, vomiting, hematemesis, confusion, convulsion, severe bronchospasm, curare-like neuronal depolarization and related deaths, acute pulmonary edema and rarely methemoglobinemia with hemolysis [4], which were not present in our case. Steroid treatment in the acute phase of corrosive ingestion is controversial [7]. Mucosal damage in our case was shown to be cured successfully with antibiotics and H2 receptor blockers without adding on steroids. It may happen both due to early diagnosis and treatment, and neonatal healing process without sequelae.

This public health problem could be easily corrected by making parents conscious of the issue. Our report was prepared in concordance with the general approval of local ethics committee and declaration of Helsinki. Informed consent of her parent was also obtained before submission. Authors have no conflict of interest to declare for this report.

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