ISSN No. 2394-3971

Original Research Article

CHILDHOOD HOMICIDE FOLLOWING MOTOR CAR BATTERY FLUID ELECTROLYTE INGESTION IN CALABAR, SOUTH-SOUTH NIGERIA: AN AUTOPSY CASE SERIES

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Submitted on: July 2018
Accepted on: July 2018
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Abstract

Battery fluid electrolyte (Sulphuric acid) is a highly corrosive agent which on accidental or forceful ingestion can result in serious injuries to the gastrointestinal tract and life-threatening resulting in death. Homicidal battery fluid ingestion is rare in Nigeria. We present the case of eleven years old female twin that was trick to drink a mixture of battery fluid electrolyte and nonalcoholic beverage drink by their father with the intention of killing them. The first twin was found dead and the second died in the hospital. Both sustained severe gastrointestinal injuries with fecal peritonitis and haemoperitoneum.

Keywords: Twins, Corrosive poisoning, Motor Car battery fluid electrolyte and Autopsy.

Introduction

Sulphuric acid is a major component of battery fluid electrolyte and it is a highly corrosive agent. Corrosive agents account for a large number of accidental and intentional poisonings and continue to be a leading toxicological source of injury for children and adults 1. The ingestion of corrosive substances may result in serious injuries of the upper gastrointestinal system and upper airways and; sometimes death or lifelong debilitating complications (2,3). In the adult population, the injuries are frequently more serious because they are intentional, with larger volumes of ingestion, or with ingestion of industrial toxic compounds 4. The ingestion of sodium hydroxide in a form of caustic soda is common in Nigeria than sulphuric acid because it is readily available and sold in the local markets without government regulation and used in the preparation of local soda soap which is patronized by rural dwellers. Ochigbo et al in Calabar and Onotai et al in Port Harcourt, Nigeria reported that caustic soda used in soap production is the commonest corrosive substance implicated in childhood accidental poisoning (5,6). A

similar study in Uyo, Nigeria also reported that 100% of the cases of caustic ingestion was accidental with caustic soda being the implicated agent in 93.7%, and 87.5% of the parents were into local soap and detergent production 7. There is paucity of data on ingestion of battery fluid electrolyte or pure sulphuric acid in Nigeria ; but substances such as Kerosene, Drugs, Alcohol-based herbal concoction, pesticides, corrosive agents and carbon monoxide were involved in 37.0%, 22.2%, 19.8%, 8.6%, 6.2% and 6.2% respectively of childhood poisoning and remains a cause of childhood morbidity and mortality in Nigeria 8. Globally, homicide rates among adolescents have decreased slightly since 2000 and more adolescent deaths result from interpersonal than collective violence. In 2015, nearly 2 in1 victims died of homicide, while the rest were killed by conflicts 9.

We report the case of a father who confessed to neighbors and the law enforcement agencies of feeding his twin daughters with a mixture of battery fluid acid and alcoholic beverage drink. His reason being that they are witches causing his failures to achieve meaningful progress in all his life endeavors.

Case Study

Cases 1 and 2:

Eleven years old identical twin who ingested battery fluid mixed with a popular non-alcoholic beverage (malt drink). The mixture was fed to the twins by the father with the intention of killing them. His motive for this horrendous crime was based on the fact that they are both witches. The Second twin was brought to the government hospital and died some hours after giving a detailed history of how the father fed them with a black bitter mixture that made them dizzy and sleeping with resultant death of her twin sister. This was the story to the medical team and law enforcement agents. A detailed autopsy was carried out on the bodies and a report written.

Postmortem Findings

Postmortem examination shows poorly kept malnourished pale adolescents small for age children with lost lustre scalp hair. No traumatic injuries were noted on their bodies. Internal examination of the first twin shows that the esophagus is dilated at the lower third with a patchy blackish mucosa and no macroscopic areas of necrosis in its proximal tract. The larynx and epiglottis demonstrated no injuries and the trachea was undamaged. Both lungs displayed congestion, a mix of blood and foam was found. Opening the abdomen, the stomach had a perforation on the cardiac region posteriorly, measuring 6.5cm across with ragged, necrotic edges and stained greenish. The peritoneal cavity was soiled with fecal matters mixed with blood clots. The Small intestine was agglomerated and the peritoneal and pelvic gutters filled with dark tan peritoneal fluids.

Internal examination of the second twin shows more severe destructive effect. The esophagus appears contracted and the stomach was anatomically deformed with remnants having a black serosa surface measuring 3.0cm x 2.3cm x 1.5cm in dimension. The mucosal surface was black with a total loss of rugae. The Small intestine was also agglomerated and the entire surfaces of the abdominal organs covered by dark tan peritoneal fluids which are a mixture of altered blood and fecal matter.

PLATE 1: Photographs shows matted intestines with fecal impaction (Figure 1&2). Figure 3 shows a perforation at the cardiac region of the stomach with necrotic margins. Figure 4 shows a burnt mucosa surface with loss of rugae.

Discussion

Deaths due to chemical injuries occur worldwide and do not pose any problem to a

pathologist in determining the cause of death 9. The use of corrosive agent like battery fluid electrolyte to perpetuate this act is not common in Nigeria, and the motive for such a crime is unheard of. Child homicide is high in South Africa as it has a distinct gender pattern with more younger age female children murdered and an increase in male homicide during adolescence. The overall child homicide rate of 5.5/100 000 population is reported 10. In the cases, under review, the gruesome crime was committed by the father of the deceased who fed them with a mixture of a popular beverage drink mixed with concentrated battery fluid to the

unsuspected twin children. His motive as confessed to the law enforcement agent was to kill them because he felt they were responsible for his parent's death. There have been numerous reported incidents of child homicide on account of witchcraft recently in Nigeria media and the rate is on the increase hence requiring an urgent government intervention to prevent such killings of innocent children. Thousands of African children have been accused of witchcraft, physically abused, and thrown out of their homes or killed over the last twenty years 11. They both suffered internal injuries to their gastrointestinal tracts due to the sulphuric acid constituent which in its concentrated form is extremely corrosive and produces great heat when in contact with water or tissues(12,13).The mucosal surfaces of the stomach of the first twin were grey to black, dry and dehydrated and the entire stomach of the second twin was charred into darkened crust. The severity of the injuries to the stomach indicates that the duration of contact was longer for the second twin and the concentration of the ingested solution was also higher when compared to the injury to

the mucosal surface of the first which display an ulcer at the cardiac region. These findings are in support of corrosive injuries due to acid and in these case sulphuric acid which causes coagulative necrosis 14. In the case of ingestion of alkalis, the injuries would have been severe to the esophagus and without significant trauma to the stomach, acids, on the other hand, leave the esophagus relatively spared, but cause significant trauma to the stomach (15,16). Macroscopic liquefaction and/or disappearance of esophagus, trachea, lung tissues and a grayish discoloration of the mucosa of the stomach were seen along with dark brown coloration of the skin, mouth, and oral cavity in an 80-year-old Japanese male who committed suicide using sodium hydroxide 17. The dark tan peritoneal fluid seen in both cases is a combination of peritoneal secretion, fecal matter, and altered blood which resulted from perforation of the stomach and intestines. The cause of death of both twins was corrosive poisoning due to battery fluid ingestion that resulting in gastric perforation with massive hemoperitoneum.

Limitation

Toxicological analysis, however, would have been done but was not carried out as we lack the facility (Gas chromatography and mass spectrophotometer).

Conclusion

Homicidal corrosive poisoning is rare in Nigeria and the intentional killing of twins was abolished by the missionary Mary Slessor and frowned by both traditional customs and the law governing our Country. The superstition of the unseen being is a problem in most third world country and Nigerian is not an exception. The perpetrator of this hideous act is answerable to the law of the Federal Republic of Nigeria as no one has the right to take away life since all belong to the state.

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