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A study on radio opaque foreign body in digestive tract of children

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ABSTRACT

Background: An estimated 40 percent of foreign body ingestions in children are not witnessed, and in many cases, the child never develops symptoms. Sharp foreign body, button battery must be carefully removed and followed up for any complications. Foreign bodies that have passed the gastroesophageal junction should be assured that the foreign body will probably pass through the GI tract.
Methods: A retrospective analysis of the records of the children below 12 years with foreign body ingestions were analysed and the radio-opaque foreign body were included in the study period between March 2012 to March 2015. The x-ray were analysed, type of foreign body, treatment and complications were noted.
Results: There were 45 children included in the study who had ingested foreign body and on radiological evaluation radio opaque foreign body was found. The coin topped the list with 30, button battery- 7 numbers, safety pin- 5 numbers. In 2 children who ingested button battery suffered cricopharyngeal stricture, which was treated with serial dilatation with bougies, while one child with open safety pin ingestion, developed pseudo- aneurysm of arch of aorta and one ear stud developed stridor with sub glottic stenosis.
Conclusions: The radio opaque foreign though is easy to visualise, but in some case it can dangerous complications. Rigid oesophagoscopy and prompt removal of foreign body is the treatment of choice.

Keywords: Radio opaque, Foreign body, Children, Digestive tract

INTRODUCTION

Foreign body ingestions by children are not witnessed in 40% of cases, and in many symptoms never develop.[1] Foreign body ingestions were asymptomatic in 50% of cases, was confirmed in a retrospective review.[2] Foreign body that has passed beyond oesophagus generally do not cause symptoms unless complications occur. Patients with foreign body lodged in the digestive tract may be asymptomatic, or may present with symptoms varying from vomiting, refractory wheezing, generalized irritability and behavioural disturbances.[1,3,4] Failure to thrive or recurrent aspiration pneumonia may be due to long standing esophageal foreign bodies. If esophageal perforation occurs due to foreign body ingestion it may result in neck swelling, crepitations, and pneumo-mediastinum.

Foreign bodies in the oesophagus that cause symptoms should be removed without any delay. Assurance to the parents of children who have swallowed a coin that has passed the gastroesophageal junction should be given the foreign body will probably pass through the Gastro-intestinal tract. The objects that are likely to pass the intestinal tract include small toys, buttons, marbles, where initial location of ingested foreign bodies is the

main determining factor for spontaneous passage. Foreign body located below the oesophagus and most ingested foreign bodies can spontaneously pass without complication.[5] These patients can be sent home with instructions to return if they experience abdominal pain, vomiting, or bloody stools with an exception, in the case of toy magnet ingestion.[6,7] The magnet should be observed of their passage in the gastro-intestinal tract, as whether they are in the same position in the serial X-rays taken, as even few hours stagnant magnet in the same level may lead to complications.

METHODS

A retrospective analysis of the records of the children below 12 years, with history of foreign body ingestion. The radio-opaque foreign body in throat/oesophagus were included in the study period between March 2012- March 2015 at Institute of Child Health, Madras Medical College. The x-ray were analysed, type of foreign body, treatment and complications were noted. The foreign bodies were removed with rigid oesophagoscopy under general anaesthesia. For button battery, after removal Ryles tube were inserted and medical gastroenterology opinion sought the next day. In safety pin removal, the child will be reviewed with X-ray post operatively and on 5th day to rule out any mediastinal complications. Routinely all the patients will be followed up 1 week after discharge with antibiotic coverage, while open safety pin/button battery ingestion child were reviewed regularly.

Inclusion criteria

Inclusion criteria were foreign body ingestion; radio opaque in X-ray in cricopharynx, oesophagus

Exclusion criteria

Exclusion criteria were non–radio opaque foreign body; radio opaque foreign bodies beyond oesophagus; radio opaque foreign body in ear, nose, bronchus.

RESULTS

There were 45 children included in the study who had ingested foreign body and on radiological evaluation radio opaque foreign body was found. Boys were 25 and girls 20 in number (Table 1). The coin topped the list with 30, with one child ingesting 2 coins at a time, followed by button battery 7 number, safety pin 5, toy part 1, clip1, ear stud 1 (Table 2), Figure 1 (a, b), 2 (a, b), 3 (a, b), 4 (a, b), 5 (a, b), 6 (a, b)}. All the coin was removed without any complication. In 2 children, who ingested button battery suffered cricopharyngeal stricture, which was treated with serial dilatation with bougies. One child with open safety pin ingestion, developed pseudo-aneurysm of arch of aorta and one ear stud ingestion child developed stridor with sub glottic stenosis.

Table 1: Sex of child.

Boys	Girls
25	20

Table 2: Type of foreign body.

Type of foreign body	Number
Coin	30
Button battery	7
Safety pin	5
Toy part	1
Clip	1
Ear stud	1

Table 3: Age group of foreign body ingestion.

Age group	Number
Less than 1 year	6
1 year-5 years	28
Above 5 years	11

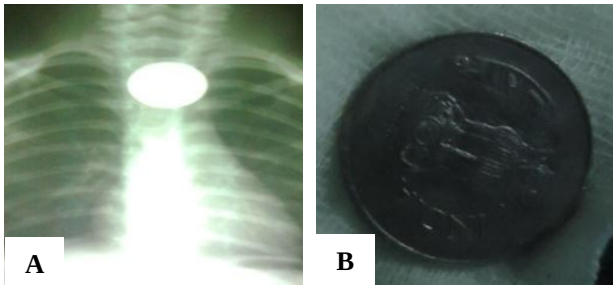

Figure 1: A= X-ray coin; B= Coin.

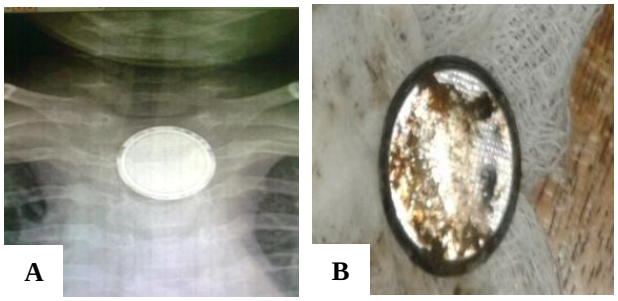

Figure 2: A= X-ray button battery; B= Button battery.

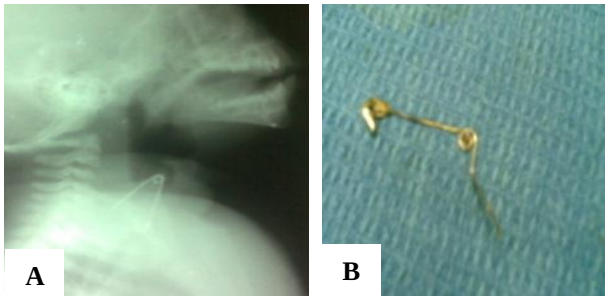

Figure 3: A= X-ray safety pin; B= Safety pin.

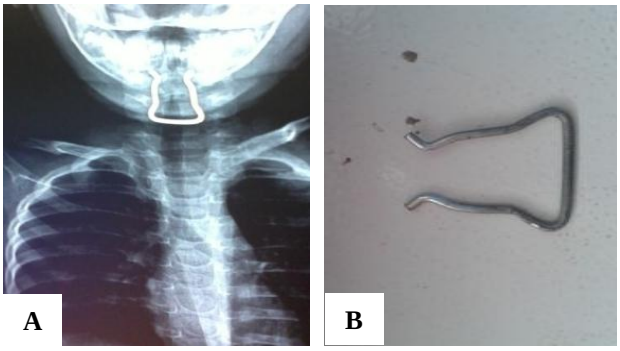

Figure 4: A= X-ray clip; B= Clip.

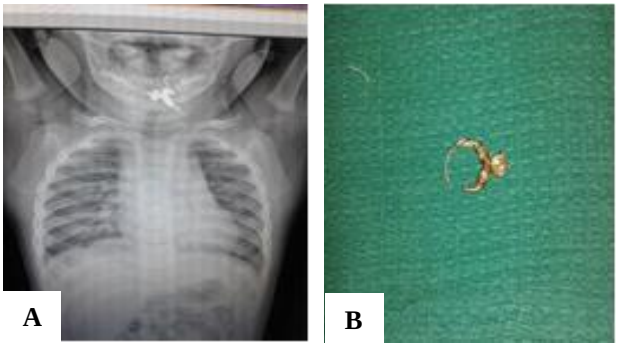

Figure 5: A= X-ray ear stud; B= Ear stud.

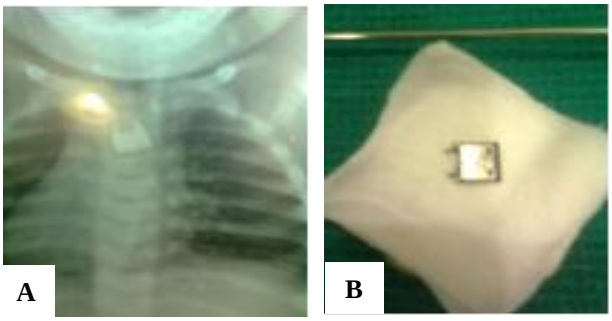

Figure 6: A= X-ray toy part; B=Toy part.

DISCUSSION

Foreign body ingestion is a common problem in the pediatric population. The placing of objects in the mouth is part of the normal interaction of a growing child. Of the approximately 1 lakh reported cases in the United States each year, nearly 80 percent occur in children between 6months and 3 years of age.[8,9] Similarly in our study, the peak incidence of foreign body ingestion was between 1-5 years accounting to 28 cases. Coins are the most common objects ingested by children in the United States in the study by Chen et al. This is similar to our study that the coins were the most common foreign body observed. The esophageal foreign bodies can damage the oesophagus and lead to strictures. Objects also may erode the esophageal mucosa, leading to tracheoesophageal fistulas and if the object erodes into the aorta, exsanguinations and death can occur. Sharp objects may perforate the esophagus.[10] Similar to this study we encountered a case of pseudo aneurysm of arch of aorta due to the open safety pin ingestion.

Button batteries and sharp objects lodged in the oesophagus require urgent endoscopic removal, all other foreign bodies lodged in the oesophagus should be removed or advanced into the stomach. Studies have shown that spontaneous leakage of electrolyte solution occurs when alkaline batteries are exposed to moisture. The leaked alkaline electrolyte solution can penetrate into tissues producing a liquefying necrosis.[11] In our study, 2 children who ingested button battery suffered cricopharyngeal stricture, which was treated with serial dilatation with bougies.

Endoscopy is the preferred method of retrieving foreign bodies confined to the upper gastrointestinal tract; its efficacy is generally limited beyond the duodenum. Surgery is required in those cases where removal is required of objects beyond the reach of the endoscopist.[12] In our study all the foreign bodies were removed under general anaesthesia using rigid oesophagoscopy.

CONCLUSION

The radio opaque foreign though is easy to visualise, but in some case it can dangerous complications. The ingestion of button battery can lead to necrosis and further stricture, aspiration pneumonitits and early removal should be attempted as any delay will lead to morbidity and mortality. The double halo sign in an x-ray differentiates it from coin which is also similar contour in x-ray. While open safety pin with open end pointing upwards, pose a challenge to the endoscopist, the pointed end must be brought into the scope, otherwise it may lead to puncture of mediastinal contents leading to complications, or tear of the mucosa. Rigid oesophagoscopy and prompt removal of foreign body is the treatment of choice.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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