sensorineural loss a few hours after the explosion and when there are no contraindications related to the other injuries. In less severe cases it is our practice to prescribe vasodilator drugs and steroids, which appear to improve the recovery, though there is no controlled statistical evidence for this.

Conclusions

Our experience with blast injuries shows that the ear has excellent properties of recovery after exposure to blast, with a high rate of spontaneous repair of the tympanic membrane and improvement of sensorineural deafness. Unfortunately this does not happen in every case, and some patients are left with residual perforations and permanent sensorineural deafness, often accompanied by tinnitus.

All of the E.N.T. surgeons in Belfast have been involved in the management of blast injuries of the ear, and we wish to express our gratitude for the generous and co-operative way in which they have agreed to our reviewing both their notes and their patients.

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Clinical Problems

Oesophageal Foreign Bodies

A. BARAKA, G. BIKHAZI

British Medical Journal, 1975, 1, 561-563

Summary

Impaction of foreign bodies in the oesophagus was analysed in 54 patients, 45 of whom were children. Of the 45 children 28 were aged 2-4 years. Coins were the most common foreign body in children (27 cases) while in adults a bolus of meat was most common (nine cases).

In 41 children there was no predisposing factor, but an underlying mechanism was detected in 88% of the adults. The mechanisms were of three types: oesophageal (stricture), neuromuscular (myasthenia gravis), and extrinsic and mechanical (ankylosing spondylitis). In children most of the foreign bodies were impacted in the upper oesophagus at the cricopharyngeal junction, which is the narrowest part of the oesophagus, while in adults the foreign body was usually impacted at the site of the predisposing lesion or in the lower oesophagus.

In all patients oesophagoscopy was performed under general anaesthesia to remove the impacted foreign body. Complications were more frequent in adults, mainly owing to the underlying condition.

Introduction

Oesophageal foreign body impaction and tracheobronchial inhalation are common in children. Inhalation of foreign bodies can result in serious complications including death.[1] Though oesophageal foreign body impaction seems less dangerous inadequate management can also result in serious complications.

We report here on impaction of oesophageal foreign bodies in children and adults and analyse the management and complications of oesophagoscopy performed in both groups for the removal of the foreign body.

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Patients

Fifty-four patients, 45 children and 9 adults, with impacted oesophageal foreign bodies were analysed. In 32 patients the diagnosis was confirmed by chest *x*-ray examination (anteroposterior and lateral) and in 13 by barium meal examination. Twenty-eight of the children were aged 2-4 years (see table). The type of foreign body varied according to age. The most common foreign bodies in children were coins, being present in 27 cases (fig. 1). In seven children the impacted object was seeds, in one it was meat, and miscellaneous objects were present in the remaining 10. In adults a bolus of meat was impacted in seven cases (fig. 2) and a chicken rib in two.

Age Distribution of 45 Children and Nine Adults with Oesophageal Foreign Bodies

Age (years)	<2	2-4	−8	−12	≤50	>50
No. of patients	7	28	6	4	5	4

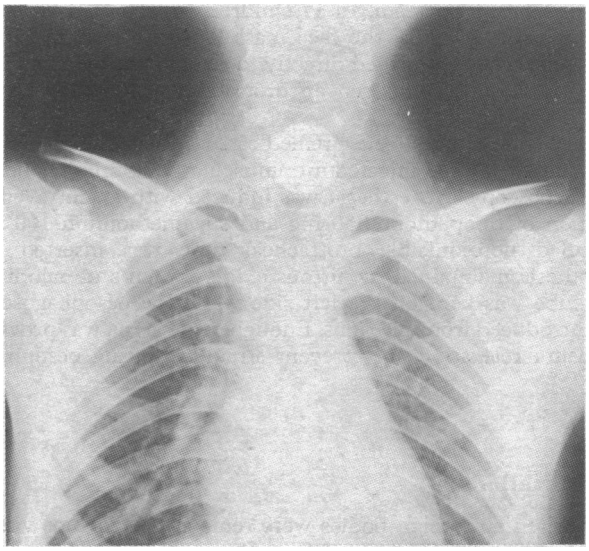

FIG. 1—Anteroposterior chest *x*-ray picture of child showing coin impacted at upper oesophagus opposite 6th cervical vertebra.

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In 41 children no predisposing factor was detected, but eight (88%) adults had an underlying lesion. Of the remaining children two had a history of lye ingestion and two a congenital lesion such as hiatus hernia and oesophageal stricture. Three of the adults less than 50 years old had oesophageal stricture and histories of lye ingestion (fig. 3) and one had myasthenia gravis, and of the four over 50 three were edentulous and one had kyphoscoliosis (fig. 4).

In children most of the foreign bodies were impacted at the upper oesophagus (35 patients), while in adults the foreign body was usually impacted at the mid-oesophagus (3) or lower oesophagus (4).

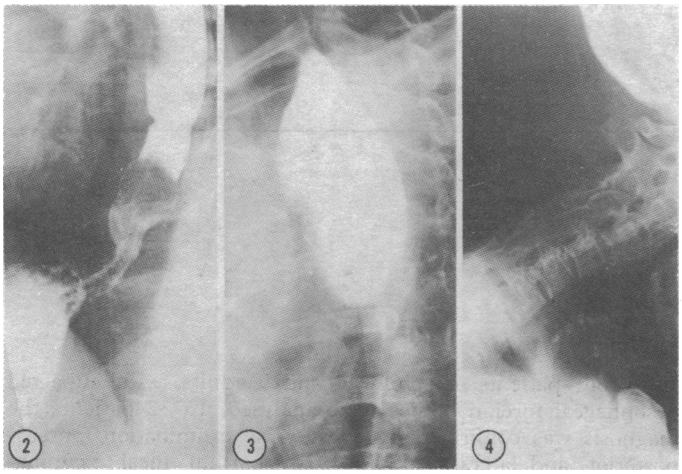

FIG. 2—Barium meal film in 45-year-old woman showing foreign body (meat) in lower end of oesophagus. No history of oesophageal obstruction. FIG. 3—Barium meal film in 31-year-old man who ingested caustic soda when 11 years showing complete obstruction of mid-oesophagus by foreign body (meat). Next to obstruction oesophagus is moderately dilated. FIG. 4—X-ray picture of 56-year-old patient with ankylosing spondylitis and history of repeated episodes of food impaction showing severe deformity in upper thoracic spine due to disease.

Management

As soon as the impaction of an oesophageal foreign body was diagnosed oesophagoscopy was performed under general anaesthesia in all patients.

In children premedication was limited to pentobarbitone sodium (4 mg/kg) and atropine (0·1 mg/year of age). Anaesthesia was induced via a face mask by oxygen-halothane using a modified T-piece system. In 17 children with foreign bodies at the upper oesophagus, the face mask was removed and oesophagoscopy was performed directly to remove the foreign body. In the rest of the children an orotracheal tube was inserted before oesophagoscopy.

The adult patients were premedicated with pethidine 75 mg and atropine 0·6 mg injected intramuscularly 30 minutes before oesophagoscopy. Anaesthesia was induced with an intravenous injection of thiopentone 350 mg and suxamethonium 100 mg. A cuffed non-kinkable orotracheal tube was inserted and anaesthesia maintained by nitrous oxide-oxygen and halothane. The tube was kept on the left side while the oesophagoscope was introduced from the right. Enough anaesthesia was provided to ensure relaxation and prevent straining during oesophagoscopy.

Complications

In children all foreign bodies were removed by forceps via the oesophagoscope except a marble and two open safety pins which were pushed to the stomach. Gastrostomy was done to remove one safety pin, while the marble and the other safety pin passed spontaneously through the gastrointestinal tract and were excreted via the anal canal (fig. 5).

In adults complications were more common than in children. In one patient with ankylosing spondylitis, tracheal intubation was difficult. In another with myasthenia gravis general anaesthesia precipitated a "myasthenic crisis" and the dose of anticholinesterase medication had to be adjusted and intermittent positive pressure ventilation applied for 24 hours. In a third adult oesophagoscopy resulted in perforation of the oesophagus, which was followed by mediastinitis and surgical emphysema (fig. 6).

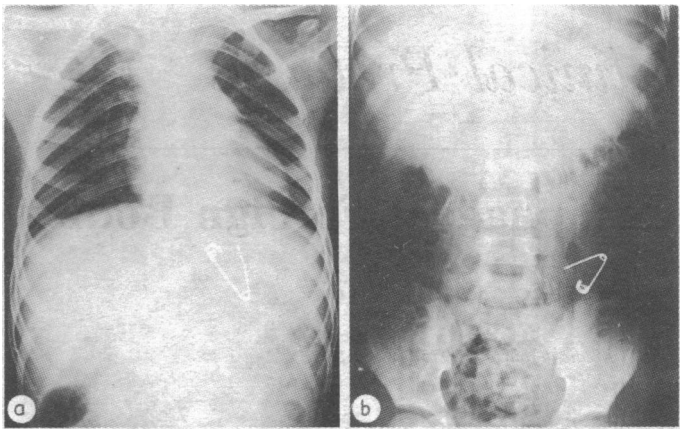

FIG. 5—Plain films of chest (a) and abdomen (b) of a 7-year-old child who swallowed open safety pin showing migration of pin to stomach and intestines. Pin passed spontaneously from anal canal.

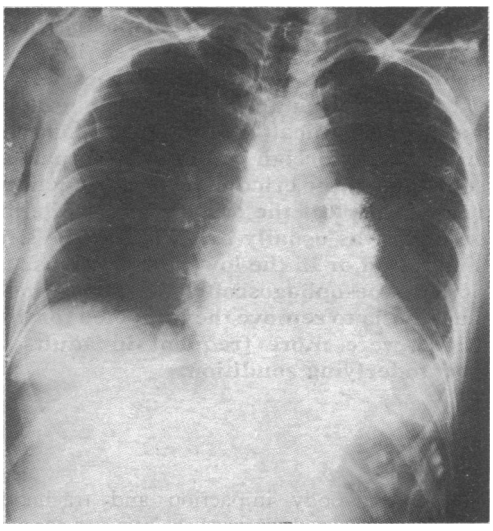

FIG. 6—Chest *x*-ray picture of 45-year-old woman. Ingestion of lipiodol after oesophagoscopy showed leakage of lipiodol from the lower end of the oesophagus into the left pleural space.

Discussion

In this series of patients with oesophageal foreign bodies about 83% of the patients were children, which differs from the experience of other centres where about half the patients were adults and half children.[2]

In most of the children there was no predisposing factor. In adults, however, a predisposing factor usually contributed to the impaction of foreign bodies in the oesophagus. Such factors

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interfere with normal swallowing, and can be classified according to the underlying mechanism into three categories: oesophageal lesions (stricture), neuromuscular disturbances (myasthenia gravis), and extrinsic mechanical hindrance (ankylosing spondylitis). In elderly edentulous patients inadequate mastication may be a sufficient explanation for impaction of an abnormally large bolus of food. Also, wearing artificial dentures, especially the full upper denture, can obliterate tactile sensation in the roof of the mouth so that bones and other sharp objects are not detected until they have entered the oropharynx.[2]

It is not surprising that impacted food is the commonest foreign body in adults and elderly patients while coins rank first on the list in children. Children of all ages have the habit of putting coins into their mouths and can inadvertently swallow them.

In most children the foreign body is impacted in the upper oesophagus at the level of cricoid cartilage, which is the narrowest part of the oesophagus. This is followed by the mid-oesophagus where it is crossed by the aortic arch and left bronchus and the lower oesophagus where it pierces the diaphragm.[3] In adults the bolus of food is usually impacted in the lower oesophagus or at the site of the underlying lesion. A large solid bolus, such as poorly chewed meat, is usually impacted in the lower oesophagus.[4]

The diagnosis of a radio-opaque foreign body in the oesophagus can be confirmed by a chest *x*-ray examination (antero-posterior and lateral), while a barium meal examination can be used to localize impaction by other objects. Whenever an oesophageal foreign body is diagnosed it should be removed by oesophagoscopy. Blind methods, such as probing the pharynx with a finger or passing catheters, hooks, etc., are not advisable. Turning the patient upside down or pounding him between the shoulder blades can have little if any effect on an oesophageal foreign body.[5]

In all patients attempts to remove the foreign body were by oesophagoscopy under general anaesthesia. Local anaesthesia can be used for adults and is particularly advisable when the underlying factor is expected to predispose to complicated general anaesthesia.

In adequately prepared children recently impacted coins at the upper oesophagus may be removed by oesophagoscopy without tracheal intubation. In other patients, however, an endotracheal tube must be inserted to provide an adequate airway during oesophagoscopy, and to minimize the incidence of aspiration of saliva, food, and other material accumulating in the oesophagus above the impacted foreign body and the predisposing lesion.

The tracheal tube comes out at the left side of the mouth, leaving the pyriform sinus and the laryngopharynx available to the endoscopist. Overinflation of the tracheal tube cuff can create extrinsic pressure on the oesophagus and interfere with oesophagoscopy and manipulation of the foreign body. Excessive positive pressure ventilation can also cause the oesophagus to compress the foreign body, increasing the degree of impaction or even leading to perforation of the oesophagus.[5] Perforation can also result from oesophageal manipulation, particularly when a foreign body is firmly impacted in a diseased oesophagus. Mediastinitis and mediastinal emphysema can follow and result in serious complications. Complications are more common in adults than in children, which can be attributed to the presence of underlying disease in most patients of the adult age group.

We thank our colleagues in the anaesthesia, ear, nose, and throat, and *x*-ray departments of the American University of Beirut for their co-operation and advice.

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General Practice Observed

A Health Centre E.C.G. Service: Its Use and Abuse

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British Medical Journal, 1975, **1**, 563-566

Summary

An average of 10·5 E.C.G.s were recorded weekly in a health centre used by 32 general practitioners serving a population of almost 65,000. The main indication for an E.C.G. was chest pain (73%). 47% of the E.C.G.s were abnormal. A change in clinical diagnosis occurred in 28% of cases and in patient management in 16%. A significant number of these changes were unwarranted, however.

It is recommended that the E.C.G.s should be recorded by suitably trained nurses and reported by a specially trained general practitioner. Further education of general practitioners in the clinical use of the E.C.G. is required.

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Introduction

There are several surveys analysing the indications for and abnormalities found in electrocardiograms (E.C.G.) carried out by general practitioners themselves[1-3] and by hospital services for general practitioners.[4-9] There does not appear to be any information published on how they use an E.C.G. service in the management of their patients apart from those of Morgans *et al.*[10] and Peniket and MacQuaide,[11] both of which were carried out retrospectively. This topic has become important as

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