Iatrogenic esophageal perforation in the neonate. Early diagnosis and therapeutic particularities

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Perforation œsophagienne iatrogène en période néonatale

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RÉSUMÉ

Prérequis : La perforation de l'œsophage est un accident rare et grave, souvant d'origine iatrogène.
But : Rapporter une nouvelle observation de perforation de l'œsophage chez le nouveau-né.
Observation : Nouveau-né âgé de 3 jours, prématuré, transféré pour ''une atrésie de l'œsophage'' suspectée cliniquement devant une épreuve à la sonde négative, réalisée à plusieurs reprises. Le cliché thoraco-abdominal a montré un arrêt relativement haut (D1) avec un abdomen non aéré. Après thoracotomie, l'œsophage thoracique était perméable. Il existait plutôt une large perforation pharyngo-œsophagienne post-traumatique. Des sutures de l'œsophage cervical avec drainage ont été réalisés et ont permis la cicatrisation. Une gastrostomie d'alimentation et une antibiothérapie triple ont été associées. L'alimentation orale a été autorisée à la 3ème semaine postopératoire. L'évolution ultérieure a été compliquée par la survenue d'une infection nosocomiale causant le décès au 3ème mois postopératoire.
Conclusion : La perforation de l'œsophage chez le nouveau-né est rare et souvent iatrogène, pouvant simuler une atrésie de l'œsophage.

Mots-clés
Perforation de l'œsophage- nouveau-né

SUMMARY

Background: Esophageal perforation is uncommon and often iatrogenic.
Aim: To report a neonatal case of esophageal perforation.
Case: A premature newborn boy was admitted with a diagnosis of oesophageal atresia after several unsuccessful attempts to insert an orogastric tube. A chest x-ray showed a "high pouch" with a gasless intestine. At operation, no atresia was found and a large traumatic perforation of the lower cervical segment was identified, requiring cervicotomy and primary closure. Oral feeding was started after 3 weeks. As a result, nosocomial sepsis occurred, causing death in the third month after surgical treatment.
Conclusion: Oesophageal perforation in the neonate is often iatrogenic and may mimic oesophageal atresia. The authors highlight the importance of early diagnosis and management.

Key-words
Esophageal perforation- Neonate

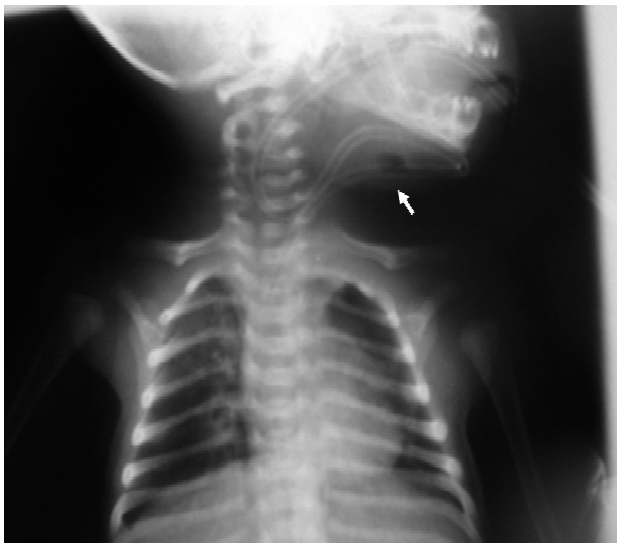
Oesophageal perforation is uncommon and often iatrogenic in the neonatal period. It is mainly caused by a traumatic nasogastric insertion or endotracheal intubation. Perforation site is usually localised in the hypopharynx or the upper esophagus. Outward symptoms can initially be passed up, but mostly they orientate wrongly to an esophageal atresia by respiratory signs and excessive salivation. The management in the neonate depends on the size of the perforation, its location, the severity of the infection and the general condition of the infant.

The aims of this paper are to report a neonatal case of esophageal perforation and to discuss diagnostic difficulties and therapeutic modalities.

CASE REPORT

A premature newborn boy was transferred to our department 24 hours after birth with a diagnosis of esophageal atresia. The baby was born at 35 weeks gestation by vaginal delivery to a 20-year-old gravida 1, para 1 mother who went into sudden premature labour after uncomplicated and unfollowed pregnancy. The birth weight was 1600 grams and the one-minute Apgar score was 8. Several attempts to insert an orogastric tube were unsuccessful. A chest x-ray showed the tube "blocking too high" above the first dorsal vertebra and also showed presence of intestinal air. There was no pneumothorax or pleural collection. The baby was transferred with a diagnosis of esophageal atresia. Physical examination was normal. A right posterolateral thoracotomy was performed with the intention of repairing a type III esophageal atresia, but no atresia was found. The tube was replaced by the anaesthesiologist. A large traumatic perforation of the lower cervical segment was identified, which was poorly accessible from the thoracotomy. The chest was closed and the baby required trans-cervical left esophageal closure, with cervical drainage. There was no pharyngeal pseudodiverticulum as an underlying cause of perforation. A gastric decompression via gastrostomy was performed. Postoperatively, history was precised: a blood clot in the oro-oesophageal tube was noticed by the nurse before the patient's arrival. The first x-ray film that was not delivered with the baby on admission showed that the orogastric tube was stopped at a level higher than the first vertebra and deviated from its expected course in the neck (figure1). Disruption was secondary to the forceful introduction of an orogastric tube. Broad-spectrum antibiotics were given for 2 weeks. The cervical drain was moved on the 5th postoperative day. Gastric feeding was instituted after the 7th day and was gradually increased. The contrast study obtained 14 days after the operation showed a small cervical fistula. Its spontaneous closure occurred 7 days later. Subsequently, oral feeding was started after 3 weeks. Because of illegal pregnancy and the absence of the mother, the neonate was transferred to a paediatric service for nutrition. Nosocomial sepsis occurred, causing death during the third month following surgical treatment.

Figure 1 : X-ray in the operating room shows a coiled tube in the neck



DISCUSSION

Most reports of esophageal perforation have been based on adult series. It is uncommon in the neonate and often iatrogenic (1-9). Early recognition and management are necessary (3, 4, 6). The seriousness of perforation is related to loose connective tissue surrounding the esophagus that fails to prevent the dissemination of infection. Untreated, an esophageal tear can lead to mediastinitis, septicaemia and death (9). Also, a contained cervical perforation causes a pharyngeal or oesophageal pseudodiverticulum (5). The location is usually the hypopharynx or upper esophageal segment (3, 5, 6). Neonates with esophageal perforation will demonstrate excessive mucous secretion, drooling and respiratory distress (1, 6). This clinical presentation can mimic oesophageal atresia and unuseful explorations could be avoided (1-5). Some clues in the clinical presentation and radiographic findings should raise the suspicion of esophageal perforation (1-4, 6): prematurity and low-birth weight, forceful and unsuccessful endotracheal intubation, vigourous oropharyngeal succion, too difficult or too easy passage of the tube, and bloody aspirate from the "pouch". Plain radiographs can show subcutaneous emphysema, pneumomediastinum, pneumothorax, pleural effusion, and/or lobe atelectasis (2-4). A feeding tube located too high, too low, or having variable or eccentric positions are unusual findings and very suggestive (4-6). The diagnosis can be recognized by esophageal water-soluble contrast studies under fluoroscopic control (2, 3, 5). It can demonstrate two blind pouches (2, 3, 8): a classical "double esophagus". If contrast-study findings are negative, some radiologic clues have to be looked for (1, 3): the opacified tract in perforation is irregular and the distance between it and the trachea is large.

Flexible endoscopy can directly facilitate the discovery of the perforation and is accurate for making a diagnosis (6, 7). The management in the neonate depends on the size of the perforation, its location, the severity of the infection and the general condition of the infant (1-5). Recent reports favour the conservative approach, with excellent results (3-7). Nonoperative treatment consists of intravenous antibiotic therapy covering anaerobes and aerobes, nutritional support, adequate fluid resuscitation, chest closed-tube drainage of a pleural effusion, respiratory support when indicated, and closes intensive care monitoring (1-7, 9). Trans-esophageal irrigation via oral intake or an appropriately positioned chest tube, may be used if the perforation is large and inoperable with gross mediastinitis (9). Surgery is reserved for large ruptures or misdiagnosed cases (like ours), aiming for guided opening tube drainage of the perforation or its primary closure (2, 5, 7). A single-layer or suture line reinforced by a viable tissue graft is recommended (9). The mortality in the literature is noted to be approximately 30 % (1, 3). However, a reasonable weight, absence of prematurity or other severe condition, should lead to a good outcome.

CONCLUSION

Esophageal perforation in the neonate is often iatrogenic and may mimic esophageal atresia. The authors point out the importance of early diagnosis and management. The best results are achieved when treated within 24 hours of the initial injury.

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