



Spontaneous Lower Esophageal Perforation Presenting as Recurrent Pneumothoraces in Neonate

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Abstract

A preterm (33 weeks + 1 day) /Small for gestational age baby girl with birth weight of 950 grams born to primigravida mother through LSCS done in view of fetal distress. Antenatal course was complicated with presence of gestational hypertension, absent end diastolic flows in umbilical artery and severe oligohydramnios (AFI 2). Baby was born depressed. After initial steps, baby was started on positive pressure ventilation in view of apnea. Baby was intubated in view of prolonged requirement of positive pressure ventilation in delivery room. Apgars were reported as 3, 5 and 7 at 1, 5 and 10 min respectively.

Case Presentation

Baby was shifted to NICU for further management. She was put on ventilator. A nasogastric tube was inserted and its position was confirmed clinically and radiologically. In view of significant ventilation needs baby received intratracheal surfactant following which the oxygen and pressure needs decreased. On Day 2 of life baby had sudden increase in ventilation needs. Transillumination was positive on left side. X-ray confirmed left side pneumothorax (Figure 1). Chest tube was placed in 5th intercostal space in anterior axillary line. Following this ventilation needs were decreased. Baby remained on low ventilator settings for next 24 h. She developed increased FiO₂ needs again on Day 3. Chest X-Ray was suggestive of right sided pneumothorax which was drained successfully with ICD. Over next one week (till DOL 8) baby had 3 times pneumothoraces and had 2 chest tubes on right side and one on left side. Inspite of these many tubes baby had some bit of air remaining in pleural cavity which could be seen on X-rays. Whenever baby had increase in ventilation needs syringe was put on end of chest tube trocar and 5 ml to 10 ml of air was aspirated, post that baby maintained saturations normally and ventilator settings again came back to normal. Some clear fluid was also coming through chest tubes but that was thought to be reactionary fluid. USG showed minimal collection of fluid on right side (approx. 10 ml) which could not be drained. In view of recurrent non resolving pneumothorax on right side, CT thorax was planned to rule out lung malformation which showed consolidation, some fluid and air pocket but no underlying malformation. Sepsis work was normal although baby was receiving antibiotics in this due course of time due to poor clinical condition. Baby was started on feeds on DOL10, increased gradually. An interesting observation was seen on D15 of life and milky fluid started coming from chest tube. Esophageal perforation was thought of. Upper GI study (Gastrografin swallow) was done which confirmed esophageal leak (Figure 2). This showed leaking of contrast into the right pleural cavity from lower 1/3rd of esophagus. Probably because of high reflux the nasogastric feeding was coming in the esophagus and milk was coming through the chest tube. X-rays were reviewed again and it was noticed that nasogastric tube position was abnormal on chest X-ray done on D2 of life (Figure 1). Lower esophageal perforation in our case seems to be either iatrogenic as a result of Nasogastric tube or spontaneous. After reviewing literature on management of esophageal perforation conservative approach was being followed and an effort was made to bypass the perforation site. Nasojejunal tube was tried to put in under fluoroscopy but could not be put. Following this feeding Jejunostomy was done in operation theatre and continuous feeds were started. Gastrografin swallow was repeated after gap of 21 days which showed no dye leak in the mediastinum or pleura and smooth passage into the stomach hence indicating healing of the esophageal perforation following conservative management (Figure 3). There was no repeat episode of air leak later on. Meanwhile child got edematous due to hypoalbuminemia secondary to inadequate supply of parenteral nutrition unable to tolerate enteral nutrition and she had persistently high ventilation needs. Baby developed late onset acinetobacter

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Received Date: 23 Sep 2019

Accepted Date: 04 Nov 2019

Published Date: 08 Nov 2019

Citation:

Gupta NP, Jha AC, Gupta S, Khanijo K. Spontaneous Lower Esophageal Perforation Presenting as Recurrent Pneumothoraces in Neonate. Clin Surg. 2019; 4: 2642.

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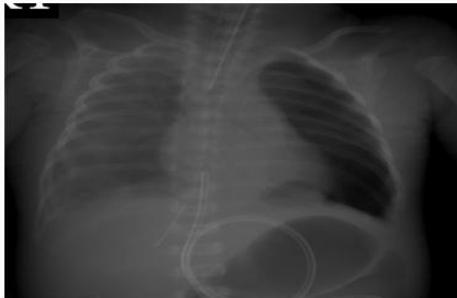


Figure 1: X-ray showing pneumothorax on left side. Note the position of orogastric tube (it is going towards right side).

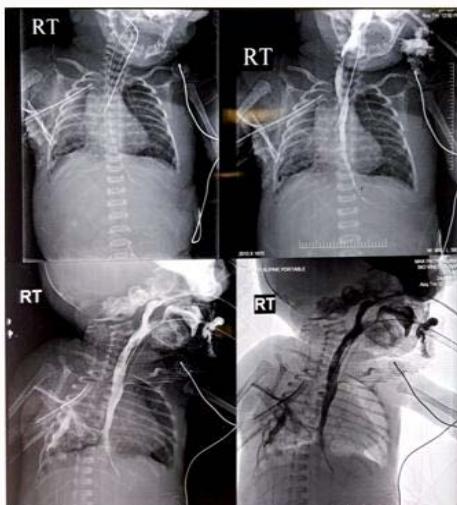


Figure 2: Gastrograffin study showing esophageal perforation in lower third of esophagus.

septicemia for which appropriate antibiotics were started. Baby was shifted to high frequency ventilation as rescue mode since she was not maintaining saturations on conventional ventilation. She eventually succumbed to death on DOL44.

Discussion

Esophageal perforation in neonates is a diagnostic challenge, because it's a rare occurrence and needs a very high index of suspicion to diagnose, as the presentation is very varied. Traumatic perforation of the cervico esophageal region was first reported by Elkof et al. [1] in newborns. Since then it has been increasingly mentioned as a complication in neonatal intensive care. Neonates most at risk are small for gestational or premature infants [2]. The incidence of esophageal perforation in babies less than 750 gm is 1:25 [3]. Most of the perforations are iatrogenic, which usually involve the cervical esophagus. Iatrogenic perforations in lower third of esophagus are very uncommon (which is there in our case). Iatrogenic perforations are mainly seen in babies who are preterms and more so in SGA babies etiology ranges from difficult intubation, traumatic laryngoscopy, suctioning of pharynx with a stiff suction catheter [4]. Second in frequency are spontaneous perforation, involving mostly the distal esophagus, usually occurs due to an intrinsic anatomic

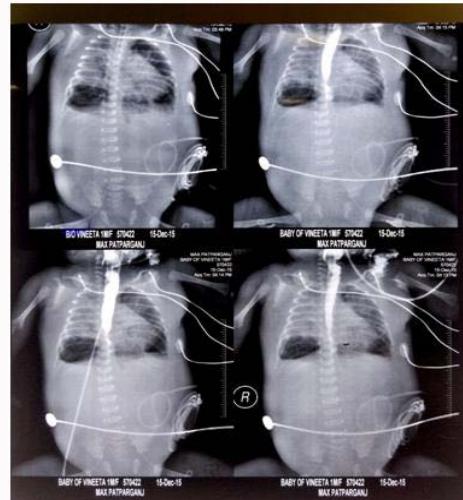


Figure 3: Gastrograffin study showing complete healing after 14 days. However a stricture is noticed at site of perforation.

abnormality of the esophageal wall or any esophageal dysfunction. Spontaneous ruptures have also been reported in cases of asphyxia and esophagitis. Clinical presentation of esophageal perforation may vary depending upon the site of involvement. Vomiting of undigested milk, choking, cyanosis and respiratory distress after feeding, coughing, hematemesis, difficulty in nasogastric tube negotiation are seen in proximal involvement [5]. Sudden respiratory distress secondary to pneumothorax or hydrothorax is the most common presentation. Distal perforations present with recurrent right sided pneumothorax, with serous/thick/milky fluid in the chest tube drain placed for pneumothorax. They may also present as aberrant way of an orogastric/nasogastric tube [2]. A plain chest X-ray usually suffices in majority of the cases, although lateral view taken at the same time also. Management of esophageal perforation is conservative. Giving rest to the esophagus and establishing an alternate mode of feeding. Almost all perforations respond to conservative management, as was seen in our case also. A high index of suspicion is must as timely diagnosis and management can be lifesaving. Most common cause of death is mediastinitis and pneumonia.

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