



Case Report

Left Congenital Diaphragmatic Hernia: A Case Report

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ABSTRACT

Congenital diaphragmatic hernia occurs when the diaphragm fails to fuse properly during fetal development, allowing the abdominal organs to move up into the chest cavity. The diagnosis can be made in the prenatal period, however, in developing countries the diagnosis is usually delayed until respiratory distress manifests, shortly after birth. We present a full term baby-boy from an uneventful pregnancy, which manifested signs of respiratory distress two hours after birth. The neonate was transferred in the neonatal intensive care unit and immediately intubated. Chest x-ray confirmed the left side diaphragmatic hernia diagnosis. Subcostal laparotomy was performed, abdominal organs (colon, stomach, intestines and spleen) were successfully restored from the thoracic cavity and the diaphragmatic defect was closed. The general condition began to improve, and on the 14th day of hospitalization, infant was discharged at home in a general good condition. Although, congenital diaphragmatic hernia in developed countries is usually diagnosed at birth, it still represents a challenge for developing countries in the absence of an antenatal screening program. The difficulties in diagnosing and managing rare congenital diseases in developing countries should highlight the need for a better organized antenatal screening program.

KEYWORDS: Congenital diaphragmatic hernia, x-ray, neonate, respiratory distress, antenatal screening

INTRODUCTION

Congenital diaphragmatic hernia (CDH) presents developmental defect of the diaphragm, allowing the protrusion of the abdominal content into the thoracic cavity [1]. The incidence is 1 in 2000 to 1 in 5000 live births, accounting for 8% of all congenital defects and nearly 2% of overall infant mortality [2,3]. Left-sided CHD is 6 times more common than right sided. Rarely, total agenesis or bilateral lesions can occur. A posterior-lateral defect is found in 90% of CDH cases (Bochdalek hernia), while antero-medial defect (Morgagni hernia) is found in 9% of cases. The hernia develops during the embryogenesis, between 4th – 8th week of gestation, when pleuroperitoneal folds and septum transversum fail to fuse [4].

Associated abnormalities of the lung, heart, vascular and central nervous systems, urinary and gastrointestinal tracts are reported in 30-40% of cases. Moreover, chromosomal abnormalities are found in 5-30 % of cases i.e. trisomy 18

and 13 [5,6]. The diagnosis can be made in the prenatal period, or shortly after birth in newborns presenting with respiratory distress. Prenatal ultrasound assessment of lung to head ratio and position of the liver are used to diagnose and predict the outcome [7]. Cases of CDH presenting later in life and adults are also reported. Prenatal diagnosis of CDH improved from 15% in the mid 80s to nearly 60% in the late 90s [8]. However, developing countries that lack a well-organized screening program are expected to have a lower percentage of prenatal diagnosis. Likewise, we present a case of a newborn with left-sided CDH diagnosed shortly after birth.

CASE REPORT

A full term baby-boy vaginally delivered from an uneventful pregnancy, weighting 3500 g, manifested signs of respiratory distress two hours after birth (sub- and inter-costal retractions and tachypnea - respiratory rate was

75/min). The neonate was transferred in the neonatal intensive care unit and immediately intubated. On auscultation of the left hemi-thorax bowel sounds were heard, while heart tones were heard on the right side of the thorax. Chest x-ray confirmed the left side diaphragmatic hernia diagnosis (Figure 1). Pulmonary ultrasound also revealed the presence of colon (haustra) into the left hemi-thorax. Echocardiography findings were normal, despite a

Figure 1. Chest x-ray showing a massive left sided diaphragmatic hernia

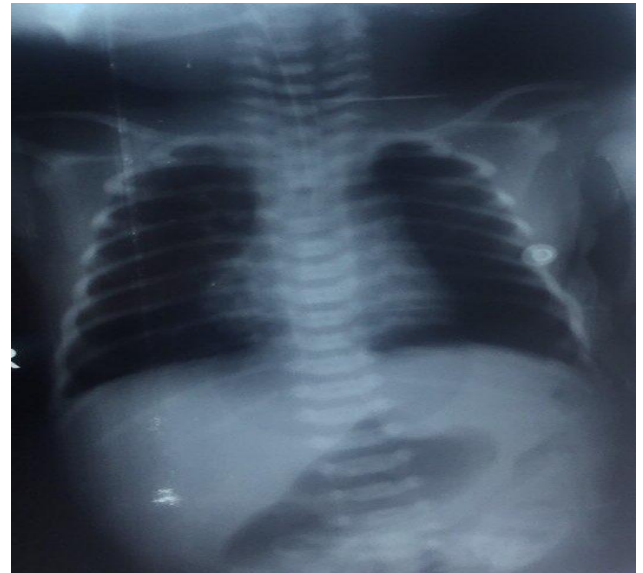


However, in the third post-operative day the situation worsens, the neonate manifests signs of respiratory distress again. Pneumothorax is shown in chest x-ray, which was immediately drained (Figure 3). The general condition begins to improve, while the infant was intubated for the

hemodynamically insignificant restrictive ductus arteriosus. Hematological and serum biochemical analyses were within normal range.

On the second day of life the infant underwent surgical intervention. Subcostal laparotomy was performed, abdominal organs (colon, stomach, intestines and spleen) were successfully restored from the thoracic cavity and the diaphragmatic defect was closed (Figure 2).

Figure 2. Chest x-ray shortly after intervention showing good ventilation of both lungs



next three days. Meanwhile, a positive hemoculture on *E. coli* arrived and antibiotherapy was started appropriately. On the 14th day of hospitalization, infant was discharged at home in a general good condition.

Figure: 3 Pneumothorax of the right lung



DISCUSSION

Congenital diaphragmatic hernia allows abdominal organs (intestines, spleen, stomach and kidneys) to penetrate into the pleural cavity, causing lung compression and shifting mediastinum to the opposite side. These infants are predisposed to develop persistent pulmonary hypertension [9]. Right-left shunt causes hypoxia and acidosis, increases pulmonary vasoconstriction and worsens pulmonary hypertension that can lead to lower lung compliance. Likewise, CDH has a mortality rate about 50%, in particular when associated with abnormalities of the lung (pulmonary sequestration or hypertension) and/or heart [7]. Fortunately, our case did not have any associated abnormality, which of course accounts for his good prognosis. In addition, delivery in an advanced center (tertiary health care institution), early postnatal diagnoses by Neonatologists, surgery on time, are also crucial determinants for the good prognosis.

CONCLUSION

Antenatal detection is important to manage the labor and immediate postnatal care. However, despite being checked-up with ultrasonography seven times during the pregnancy, antenatal diagnosis was not made in the presented case. We presented this case to highlight the difficulties to diagnose and manage rare congenital diseases in developing countries.

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