

## Case Report of Right-Sided Bochdalek Hernia, and Partial Situs Inversus in a Male Neonate

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### Abstract

### Case Report

We present a rare case of right-sided Bochdalek hernia, and partial situs inversus in a male neonate. The radiological and clinical data are discussed. This could be one of the rarest presentations of diaphragmatic hernia that is associated with situs viscerum inversus in neonates.

**Keywords:** Congenital diaphragmatic hernias, Bochdalek hernia, situs inversus.

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## INTRODUCTION

Bochdalek hernia (BH) or congenital diaphragmatic hernia is a fatal condition. In this anomaly the foramina of Bochdalek persists open, and the abdominal contents go into the thorax during intrauterine life [1]. It occurs in 1 in 2,500 to 3,000 newborns [2]. Majority of cases diagnosed in the first few days of life and have a bad outcome, because its association with pulmonary hypoplasia and pulmonary hypertension. Left-sided CDH is more common about 85% of cases. It allows migration of both the intestine and solid organs into the chest. On the right sided (13% of cases), the liver and some of the large bowel might migrate to the chest [3]. The situs inversus (SI) occurs in 1 in 5,000 to 20,000 newborns and it might be diagnosed incidentally while investigating another reasons [4].

## CASE REPORT

Our patient is a full term 2.800-kg male neonate born by normal vaginal delivery from a previously healthy mother. The patient was born with respiratory distress and cyanosis. Findings upon physical assessment showed bulging of the right side of the chest, intercostal and subcostal retractions with diminished breath sounds on the right side of the chest, and a scaphoid shaped abdomen. Intestinal loops in the right hemithorax with left displacement of the

mediastinum noted on the chest X-ray (Fig-1). Resuscitation of the neonate was done immediately and the patient was intubated and put on ventilator on the SIMV MODE: pr.18, respiratory rate 40, PEEP 3, and FIO<sub>2</sub> 50%. When the patient became stable after 36 hours, laparotomy through the right transverse subcostal incision was done. The right diaphragmatic defect and muscular rim was identified and repair with interrupted nonabsorbable sutures was performed. Intraoperatively, we noticed that the liver and the gallbladder to be situated in the left and the spleen in the right side of the abdominal cavity. Postoperative course was uneventful and the patient was off ventilation on the 6<sup>th</sup> postoperative day. The chest X-ray (Fig-2) and 2D echocardiography showed a normal situated left sided heart. The patient was discharged after 20 days in good condition and on full feed.



Fig-1



Fig-2

## DISCUSSION

Embryology of bochkdalek hernia caused by failure of closure of the pericardioperitoneal canal by the pleuroperitoneal membranes, in 8th gestational week of life. The early return in the coelomic cavity of the foregut results in wide posterolateral canal and dysfunctional pleuroperitoneal membranes. So that abdominal viscera migrate into the chest, subsequently pulmonary hypoplasia occurs by lung compression [6].

Left CDH is more common than the right due to the early closure of the right pleuroperitoneal canal, inspite of that no theories to explain this [7].

Left-right asymmetries in organ situs are depend on an intact left-right axis. Abnormalities in the

classic asymmetries (situs solitus) might happen as a complete mirror image reversal of all of the organs (situs inversus totalis), or an incomplete reversal resulting in a variety of intermediate defects (situs ambiguous), including heterotaxy (reversal of individual organs along the left-right axis) and isomerism (duplication or changes in normal symmetry). In situs inversus totalis, the heart is on the right side of the thorax, the left lung had three lobes and the right lung had two lobes, the spleen and stomach lies on the right side, the liver and gallbladder lies on the left side and the bowel is inverted.

Only few reports have presented single laterality anomalies in association with a right-sided diaphragmatic hernias; one presented an abdominal SI associated with a right-sided BH [9-11]. Retinoic acid has been implicated in both diaphragmatic development and situs anomalies [3].

## CONCLUSION

Right-sided BH and partial situs inversus are two rare disorders and our case could one of the rarest cases of this association in literature.

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