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## Incidental finding of dextrocardia with situs inversus totalis in a day old neonate: Case report and review of the literature

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**Abstract:** Dextrocardia with situs inversus are rare congenital anomalies which can be asymptomatic and compatible with normal life. They are characterized by mirror images of all intra-thoracic and intra-abdominal viscera. Our aim is to report an incidental finding of dextrocardia with situs inversus in a neonate with neonatal sepsis. A day-old male term neonate presented with features of infection. Physical examination revealed cardiac apex on the 4th right intercostal space, along the mid-clavicular line. Chest radiograph and abdomi-

nal ultrasound confirmed the diagnosis of dextrocardia with situs inversus. Bilateral cervical ribs were also seen on chest radiograph. He was managed with antibiotics and discharged. Newborn babies should have a thorough physical examination after delivery before discharge to enable early diagnosis of congenital anomalies for appropriate referral.

**Key words:** Dextrocardia, neonate, neonatal sepsis.

### Introduction

Dextrocardia (also called looping defect) is an abnormal congenital positioning of heart on the right side<sup>1</sup>. Situs inversus totalis also called situs transversus, is a congenital condition in which major visceral organs are reversed or mirrored from normal positions. Many people with situs inversus are unaware of their unusual congenital anomaly until they seek medical attention for unrelated conditions<sup>1</sup>. Individuals with dextrocardia and situs inversus totalis may have associated congenital heart malformations<sup>2</sup>, primary ciliary dyskinesia or splenic malformations.<sup>3</sup>

We describe a case of dextrocardia with situs inversus totalis in a one day old neonate with neonatal sepsis, the first case to be reported in Gusau, Zamfara State, Nigeria.

### Case report

A 24 hour old male term neonate presented with complaints of refusal to suck, fever, convulsion and bloody stool of few hours duration. He had associated abdominal distension, but no vomiting or bleeding from any other site. Pregnancy was supervised, uneventful, no maternal risk factors of sepsis. Delivered at a general hospital and cried immediately after birth. He was not examined by a paediatrician after delivery as none is available at the hospital.

On examination he was not febrile and not pale. Cardiovascular system examination revealed full volume pulses, regular with apex beat at 4<sup>th</sup> right intercostal space mid clavicular line. He had normal heart rate with first and second heart sounds. Abdomen was full, soft, not tender and no organ was palpable. Rectal examination revealed finger stained with bloody stool.

Chest X-ray showed normal heart size with apex located to the right in keeping with dextrocardia. Hepatic shadow was noted on the left and possible splenic shadow on the right. There were cervical ribs bilaterally. Abdominal scan demonstrated liver on the left while the spleen was on the right. Demonstrable bowel loops were slightly distended but otherwise normal.

Full blood count showed leucocytosis, random blood sugar and serum electrolytes were normal. Blood culture did not yield any growth. Cerebrospinal fluid analysis was in keeping with bacterial meningitis and gram negative cocobacilli were seen on microscopy. However, cerebrospinal fluid culture yielded no growth.

**Fig 1:** Radiograph showing the cardiac apex pointing to the right and the hepatic shadow on the left.



Echocardiography was not done as it is not available in our hospital

Diagnosis of early onset neonatal sepsis with meningitis was made with background Dextrocardia and situs solitus inversus. He was managed on nil per os, antibiotics, anticonvulsants and intravenous fluid; however blood transfusion was not required. Bloody stool stopped on 5<sup>th</sup> day of admission and he remained stable and was discharged by 10<sup>th</sup> day. Echocardiography in another centre was not done by the parents as requested and baby was lost to follow up at age of 3 months despite adequate counselling of parents.

## Discussion

Dextrocardia with complete situs inversus is rare, usually discovered incidentally in otherwise normal subjects<sup>2</sup>. Mirror-image dextrocardia with situs inversus occurs in 1 in 10, 000 of the general population.<sup>1,2</sup>

Most neonates delivered in the hospitals are not examined especially by paediatricians as is the case of this index baby, to detect such cases in neonatal period. It may be discovered in infancy because of associated anomalies but often remains asymptomatic and discovered by chance in adult life.<sup>4</sup> Many people with this condition are unaware of their unusual anatomy until they seek medical attention for an unrelated condition.<sup>1</sup> This anomaly may not be diagnosed until late life in some cases and it is associated with primary ciliary dyskinesia and splenic malformations.<sup>3</sup>

It has been shown that the incidence of congenital heart malformations is higher in patients with dextrocardia and situs inversus than in patients with normal situs soli-

tus.<sup>2</sup> This is due to the fact that dextrocardia with situs inversus is merely a mirror image of the normal situs solitus,<sup>2</sup> hence any associated cardiac malformations are usually mirror images of similar malformations in people with the normal situs solitus.<sup>2</sup> In isolated dextrocardia, in which the heart is on the right side without inversion of the abdominal viscera, malformations of the heart are almost always invariably present.<sup>2</sup> It has been postulated that even though the factors responsible for situs inversus are not clear<sup>2</sup> autosomal recessive gene, maternal diabetes, cocaine use and conjoined twinning are implicated.<sup>5,6</sup>

A case of dextrocardia with situs inversus occurring early in life has only been reported in a three day old neonate<sup>7</sup>. Some cases of dextrocardia have been reported in Nigerian children and adults which were mostly incidental findings. Ekpe al<sup>7</sup> reported on dextrocardia with situs inversus co existing with neonatal intestinal obstruction in a three day old neonate. A 14 year old child was incidentally found to have dextrocardia with situs inversus when he was evaluated for chronic sinusitis at Enugu.<sup>8</sup>

Danbauchi and Alhassan<sup>9</sup>. in Zaria reported two cases of dextrocardia with situs inversus; a 35-year-old man that presented for the first time with respiratory symptoms but no cardiac symptoms and a 14-year-old who presented with cardiac symptoms.

Dextrocardia with situs inversus have also been reported in cadavers in medical schools during dissection in Nigeria<sup>10</sup> and India.<sup>11</sup> An unusual occurrence of dextrocardia with situs inversus have been reported in two generations of families in India; affecting a father and his two sons following consanguineous marriage.<sup>2</sup>

## Conclusion

An incidental finding of dextrocardia with situs inversus in a newborn is reported and the need for clinicians to have high index of suspicion is highlighted due to its asymptomatic nature. Clinicians should look for this anomaly when reporting or viewing chest x-rays. Newborn babies should have a thorough physical examination after delivery before discharge to enable early diagnosis of congenital anomalies for appropriate referral.

### Authors contributions

Garba BI and Aminu MS: Conceptualised the case report.

Onazi SO, Musa A, Adedokun MB and Sule MB : Literature review.

Sule MB Ultrasound.

Garba BI and Aminu MS: Manuscript writing

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