



Cases of Situs inversus: a report

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ABSTRACT

SITUS INVERSUS is the mirror image of normal, where there is transposition of abdominal viscera associated with dextrocardia. It is often accidentally discovered during routine physical examination and radiological examination.

In the present study, there are two cases of situs inversus. One adult male of 23 years presented with dextrocardia and situs inversus was accidentally detected during the routine physical examination. In another case, a 9-month male child also presented with situs inversus with ventricular septal defect. The above cases are found to be rare elsewhere but in Nepal it seems to be common. Hence, these cases were studied and reported.

Keywords: Situs inversus; Dextrocardia; Ventricular Septal Defect; Atrial Septal Defect.

AIM

The objective of this paper is to report the various positions of viscera found in two cases, aged 23 yrs and 9 months respectively. These were detected during the routine physical examinations. Efforts were also made to detect any other anomalies associated with them.

INTRODUCTION

Normally thorax and abdomen are 2 separate cavities separated by the diaphragm. Thorax is again divided into the middle part

mediastinum, and pleural cavities on either side, whereas the abdomen is arbitrarily divided into 9 quadrants, where the viscera like stomach and spleen lie on the left side of the abdomen and the liver is present on the right side of the abdomen. The position of any viscera in the thorax and abdomen is the same in all individuals but sometimes abnormalities may occur when the positions of the viscera differ from normal description.

Situs inversus is the mirror image of normal, where there is transposition

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of abdominal viscera associated with dextrocardia and having the left atrium on the right side and right atrium by the left side. This was accidentally detected during a routine check-up by the clinician and radiologist. It maybe associated with other congenital or acquired diseases of the heart.¹

CASE REPORT

A male, aged 23 years, presented himself for routine check-up. He was left handed since childhood. There was no family H/O SITUS INVERSUS. But there was family history of left handedness (mother and sister).

ON EXAMINATION:

Young male – well built and nourished

Pulse 76/ minute

B.P. 100/80 mm Hg

R.R. – 22 B/P Minute

CVS

Apical impulse was felt on the **right side** in VI inter costal space. On auscultation both s1 and s2 were heard in all auscultatory areas. No skeletal deformity was detected.

Per Abdomen-soft, no mass felt. Bowel sounds were heard. The above abnormal position of the apex beat led the physician to think of other anomalies.

Investigations

- A. Haemogram – Within normal limits - Hb% = 14.7 gm%. His blood group B+ positive
- B. Urine analysis Normal
- C. Elisa test – Negative
- D. Rheumatoid factor – Negative

E. Ultra sound showed – Situs inversus with liver on the left side and spleen on the right side.

F. X-ray of chest showed – Dextrocardia. Apex of the heart seen on the right side of the chest, liver on the left side and spleen on the right side.

G. ECG showed – Dextrocardia

CASE - 2

A 9-month male child presented with complaints of rapid breathing, easy fatigability while feeding, and repeated episodes of respiratory tract infections for 4 months. There was no family history of any heart disease among siblings and parents. There was no history of intrauterine infection, diabetes mellitus, hypertension and drug intake during antenatal period of the mother.

On general examination the baby was dyspnoeic, had mild puffiness over the face, heart rate 160/minute, respiratory rate 62/minute, pale, but no cyanosis, clubbing, oedema, icterus lymphadenopathy. Weight was 6 kg, length was 65 cm., head circumference 35 cm and chest circumference 34.5 cm.

CVS examination revealed JVP slightly raised. Brachial pulse rate 160/minute, regular, synchronus with other pulses.

The apex beat was visible on the right side in the 6th intercostal space, just lateral to mid clavicular line. Hyperdynamic in character, systolic thrill present on percussion, heart dullness present on the right side and liver dullness present over the right

3rd to 6th intercostal space with systolic murmur of grade 5/6.

On abdominal examination, there was hepatomegaly 3 cm below the left intercostal margin, soft, having the rounded border.

X-ray revealed DEXTROPOSITION OF THE HEART AND SHOWED EVIDENCE OF BIVENTRICULAR HYPERTROPHY. STOMACH & SPLEEN ON THE RIGHT SIDE. There were no other evidence of congenital anomalies.

IMPRESSION: SITUS INVERSUS WITH VENTRICULAR SEPTAL DEFECT

DISCUSSION

Situs Solitus is the term used when there is a normal arrangement of viscera of the abdomen and heart with the right atrium on the right side and the left atrium on the left side, trilobed lung on the right side and bilobed lung on the left side. In the abdomen, the major lobe of the liver is on the right side, the stomach and spleen on the left side.

This knowledge of position of the heart as well as the location of the abdominal viscera aids in defining the nature of anomalies. Roentgenography of the abdomen helps to identify the abdominal situs by localization of the position of the stomach and other abdominal viscera generally atria and viscera situs are related.⁴

If the viscera are normally located, atria have a normal position.

The malformation called Dextro Cardia is caused when the primitive heart tube folds to the left instead to the right during development.

1. Most of the individuals with dextro cardia exhibit a general reversal of many organs, a condition called **situs inversus**.
2. Dextro cardia and Situs inversus have been shown in genetically controlled mice. Genes are located on chromosome number 12 and 4. It is **Autosomal Recessive**.
3. It is often accidentally discovered during a routine chest X-ray or during a routine physical examination.

Hence pain of myocardial infarction maybe referred to the right side of the chest and pain due to acute appendicitis is localized on the left iliac fossa on palpation, cardiac apex is felt on the right side of the chest, liver is felt on the left side of the abdomen. On auscultation, heart sound are heard on the right side of the chest. The X-ray shows exactly mirror image of the normal. The aortic arch and stomach bubbles are seen on the right along with cardiac apex.³

ECG shows negative p, QRS, and T waves in lead I. The complexes in lead aVR, aVL are reversed of the normal.³ Dextro version is also known as **Right thoracic heart**. It is likely to be detected because other associated cardiac anomalies coexist with dextro-cardia. Congenital disorders maybe pulmonary stenosis, VSD, ASD. Heart sounds with murmur are louder on the right side.⁴

1. **Meso cardia:** In this condition the heart is centrally situated in the chest but cardiac malformations are not present.⁴

2. **Situs Ambiguus:** Undefined position of viscera of the abdomen.⁴
3. **Asplenia syndrome:** In this condition, the spleen is absent, associated with severe cardiac malformation and bilateral right sidedness like bilateral tri-lobed lungs with epiarteral bronchii on both sides of the lung, and undefinable position of viscera of the abdomen.⁴
4. **Polysplenia syndrome:** In this condition, there are multiple masses of spleen either 2 or more. Situs ambiguus but bilateral left sidedness, associated with cardio vascular abnormalities. Generally, there maybe left to right shunts at atrial or ventricular levels.⁴
5. **Kartagener's Syndrome** is characterized by sinusitis, bronchiectasis, situs inversus associated with infertility.³

In the present study, there are two cases of dextrocardia with situs inversus.

- a. A 23-year male, a student, well built and nourished, left handed with also a family history of left handedness presented. He was accidentally detected to have Dextrocardia associated with transposition of all abdominal viscera on doing ultrasound and chest X-ray preoperatively. But luckily he was not associated with any cardiovascular anomalies like **ASD, VSD PULMONARY STENOSIS**. No murmurs were heard but loud heart sounds were heard on the right side of the chest. Clinically he was normal with stomach on the right side along with the spleen and liver on left side.

No family history of situs inversus, heart diseases, hypertension.

- b. A 9-month male child was seen in OPD at Kohalpur hospital for rapid breathing and easy fatiguability and repeated respiratory infection for 4 months. The clinical examination of the child revealed **situs inversus with ventricular septal defect** with the **apex beat** visible on the **right side** in the 6th intercostal space just lateral to MCL. On auscultation s1 and s2 marked with **PAN-SYSTOLIC MURMUR** was heard over the 3rd to 6th intercostal space of grade 5/6. On P/A examination, revealed **Hepatomegaly** with rounded border 3 cm below the **left intercostal margin**. X-ray revealed **Dextroposition of the heart** and showed evidence of **Biventricular hypertrophy**.
- c. In both cases, there was no evidence of other congenital anomalies like Meso cardia, asplenia, polysplenia, situs ambiguus, Kartagener's syndrome and no skeletal deformities were found.

CONCLUSION

SITUS INVERSUS is often associated with **DEXTROCARDIA**. It is of no clinical importance except if left, its presence unrecognized, it may lead to **misdiagnosis** and may develop other cardiac anomalies in later part of life.

ACKNOWLEDGEMENTS

My sincere thanks to Managing Director, Director, Principal, Professor and Head of Department of anatomy and staff of anatomy department. K.P. SINGH Librarian of Nepalgunj

Medical College Chisapani and Rara Computer
Centre, Nepalgunj.

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