Revista de Ciencias Médicas de Pinar del Río

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6877

CASE PRESENTATION

Dextrocardia: Case Report and Literature Review

Déborah Mitjans-Hernández[1], Eduardo Antonio Hernández-González[1], Sialy de las Mercedes Rivera-López[1], Luis Ángel Cueto-Delgado[2]

[1]Medical Sciences University of Pinar del Río. "Dr. Ernesto Che Guevara de la Serna" Faculty of Medical Sciences. Pinar del Río, Cuba.
[2]Medical Sciences University of Pinar del Río. "Abel Santamaría Cuadrado" Provincial Hospital. Pinar del Río, Cuba.

Received: September 6, 2025
Accepted: September 8, 2025
Published: November 11, 2025

Citar como: Mitjans-Hernández D, Hernández-González EA, Rivera-López S de las M, Cueto-Delgado LA. Dextrocardia, reporte de un caso y revisión de la literatura. Rev Ciencias Médicas [Internet]. 2025 [citado: fecha de acceso]; 29(2025): e6877. Disponible en: http://revcmpinar.sld.cu/index.php/publicaciones/article/view/6877

ABSTRACT

Introduction: dextrocardia is a rare congenital condition in which the heart's axis is displaced to the right. It may present as an isolated anomaly with normal visceroatrial arrangement (situs solitus), together with some organs located on the contralateral side (situs inversus totalis), or with all vital thoracic and abdominal organs positioned on the opposite side of the body. **Objective:** to present a clinical case of a patient with dextrocardia to highlight the importance of early recognition and thorough evaluation of this condition.
Case Presentation: a 58-year-old female patient with a history of arterial hypertension and intermittent jaundice. Abdominal ultrasound revealed choledocholithiasis and situs inversus. Dextrocardia was confirmed by chest X-ray, electrocardiogram, and echocardiogram. Complementary tests showed significant hepatic abnormalities. Treatment was symptomatic, and regular cardiological follow-up was indicated. This case emphasizes the importance of clinical and radiological recognition of this rare anatomical condition to avoid diagnostic and therapeutic errors.
Conclusions: dextrocardia is an uncommon congenital condition in which the heart is displaced to the right. The exact cause remains unknown. Situs inversus is often undiagnosed unless it is incidentally discovered during investigations for another medical condition. A systematic and comprehensive patient evaluation is essential for diagnosis. Imaging studies are crucial in establishing the diagnosis.

Keywords: Dextrocardia; Case Reports; Situs Inversus.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6877

INTRODUCTION

Dextrocardia is a rare congenital condition in which the heart's axis is displaced to the right, meaning the apex is oriented to the right of the midline in a position completely opposite to the usual orientation.[1] Dextrocardia may occur as an isolated anomaly with normal visceroatrial arrangement (situs solitus), along with some organs on the contralateral side (situs inversus totalis or mirror-image dextrocardia), or with all vital thoracic and abdominal organs located on the opposite side of the body. The specific etiology of dextrocardia is unknown, but there is evidence of inheritance as an autosomal recessive trait or through mutations in a gene located on the X chromosome.[2]

Fabricio was the first to explain the concept of situs inversus in humans, while Aristotle described it in animals. Dextrocardia was initially identified in 1643 by Marco Severino. In 1888, Küchenmeister was the first to physically examine four living individuals and describe the findings with drawings. Vehsemeyer is credited with being the first to demonstrate visceral transposition using X-rays in 1897. The complete inverted arrangement of thoracic and abdominal organs in situs inversus was described by Matthew Baillie. Situs inversus is a very rare condition, with reported incidence rates of approximately 1 in 12,000 pregnancies. No ethnic or gender predilection has been described.[3,4,5]

Dextrocardia is a rare congenital anomaly that may be asymptomatic or associated with other cardiac and systemic abnormalities, potentially complicating the patient's clinical diagnosis and management. Considering the above, this study was conducted with the objective of presenting a clinical case of a patient with dextrocardia to highlight the importance of early recognition and thorough evaluation of this condition.

CLINICAL CASE REPORT

A 58-year-old female patient with a personal history of arterial hypertension presented to the emergency department with intermittent jaundice. An abdominal ultrasound was performed and revealed choledocholithiasis and suspected situs inversus. The patient was admitted for further evaluation and treatment.

Physical Examination

- Skin and mucous membranes: Icteric and moist
- Respiratory system: Vesicular murmur audible, vocal vibrations preserved. No adventitious sounds. Respiratory rate: 18 breaths per minute.
- Cardiovascular system: Heart sounds rhythmic, with good tone and intensity. No murmurs auscultated. Peripheral pulses present and synchronous. Heart rate: 87 beats per minute.
- Abdomen: Soft, depressible, tender to superficial and deep palpation. Bowel sounds present.

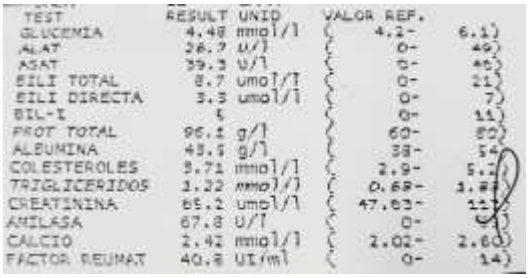
ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6877

Complementary Examinations

- Laboratory analysis

Hemogram: Hematocrit 0.32 L/L, platelet count: 210 × 10⁹/L, leukocytes 7.0 × 10⁹/L, polymorphonuclear neutrophils 0.70/L, lymphocytes 0.27/L, eosinophils 0.01/L, monocytes 0.02/L, band cells 0.00
Erythrocyte sedimentation rate: 35 mm/h
Coagulation profile: PT control 13 sec, PT patient 1 sec, bleeding time 3 sec
Blood group and Rh factor: A+
Serology: Non-reactive

A hepatic panel was performed (Figure 1). Liver function tests showed significant elevations in transaminases (ALT and AST) and total and direct bilirubin. Cholesterol and triglyceride levels were within reference ranges.



TEST	RESULT	UNID	VALOR REF.	
GLUCEMIA	4.48	mmol/l	4.2-	6.1)
ALAT	26.7	u/l	0-	49)
ASAT	39.3	u/l	0-	45)
BILI TOTAL	8.7	umol/l	0-	21)
BILI DIRECTA	3.3	umol/l	0-	7)
BIL-I	5		0-	11)
PROT TOTAL	96.1	g/l	60-	80)
ALBUMINA	48.6	g/l	38-	54)
COLESTEROLES	5.71	mmol/l	2.9-	5.2)
TRIGLICERIDOS	1.22	mmol/l	0.68-	1.##)
CREATININA	65.2	umol/l	47.63-	11#)
AMILASA	67.8	u/l	0-	#)
CALCIO	2.41	mmol/l	2.02-	2.60)
FACTOR REUMAT	40.8	UI/ml	0-	14)

Fig. 1 Hepatic profile.

- Imaging studies

Abdominal ultrasound

Patient with situs inversus. Pulmonary bases without effusion. Gallbladder with double angulation and large lithiasis in the neck and body, the largest measuring approximately 18 mm. Common bile duct 3 mm, portal vein 10 mm. No dilation of the intrahepatic biliary tree. Pancreas with slight increase in echogenicity. No free fluid; no other abnormalities observed in other organs.

Chest X-ray

Artifact-laden image showing a cardiac silhouette with chambers projected into the right hemithorax, consistent with dextrocardia or situs inversus (Figure 2). Normal bronchovascular markings. No acute pleuropulmonary lesions identified. Discontinuity at the level of the left first costal arch—possible trauma at this level or artifact; clinical correlation recommended.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6877

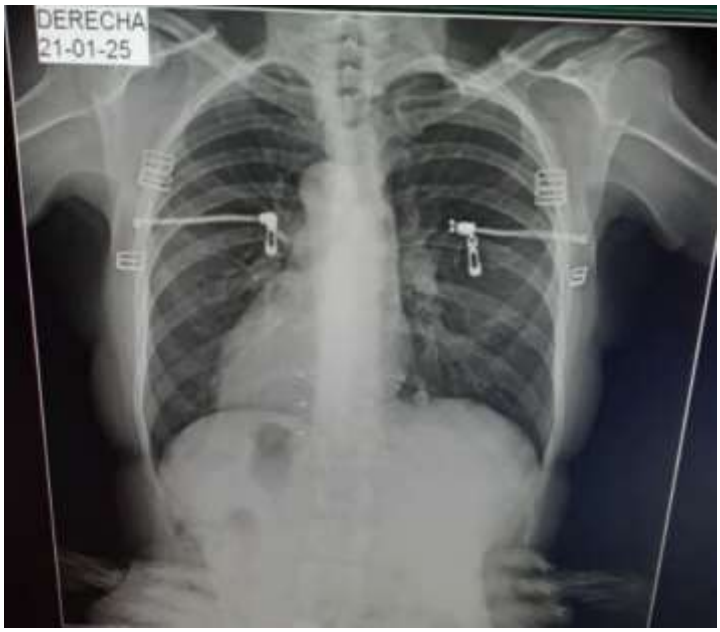
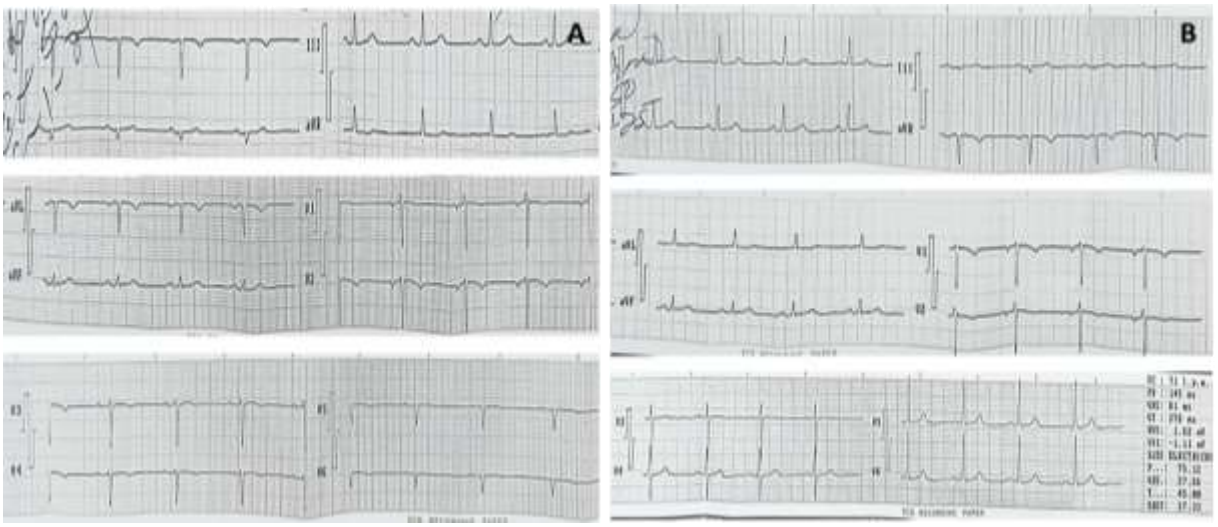


Fig. 2 Chest X-ray. Posteroanterior view.

Electrocardiograms

During the first electrocardiogram, the diagnosis of dextrocardia was unknown. Findings included sinus bradycardia, right axis deviation, positive P waves in aVR and V1, and absence of R wave in left precordial leads (V4, V5, and V6) (Figure 3). Given these electrical findings, dextrocardia was suspected, and a second ECG was performed with lead placement adjusted accordingly, confirming a normal sinus rhythm.



Notes: (A) First electrocardiogram; (B) Second electrocardiogram

Fig. 3 Electrocardiograms performed.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6877

Echocardiogram
Transthoracic echocardiographic evaluation confirmed dextrocardia with chamber rotation. The left ventricle (LV) was not dilated, with normal wall motion, no evidence of thrombi or vegetations, no aneurysms, and a left ventricular ejection fraction (LVEF) of 60%. Valvular apparatus appeared structurally and functionally normal. No pericardial effusion, no signs of pulmonary hypertension, normal diastolic function, and presence of the moderator band as an incidental finding (Figure 4).

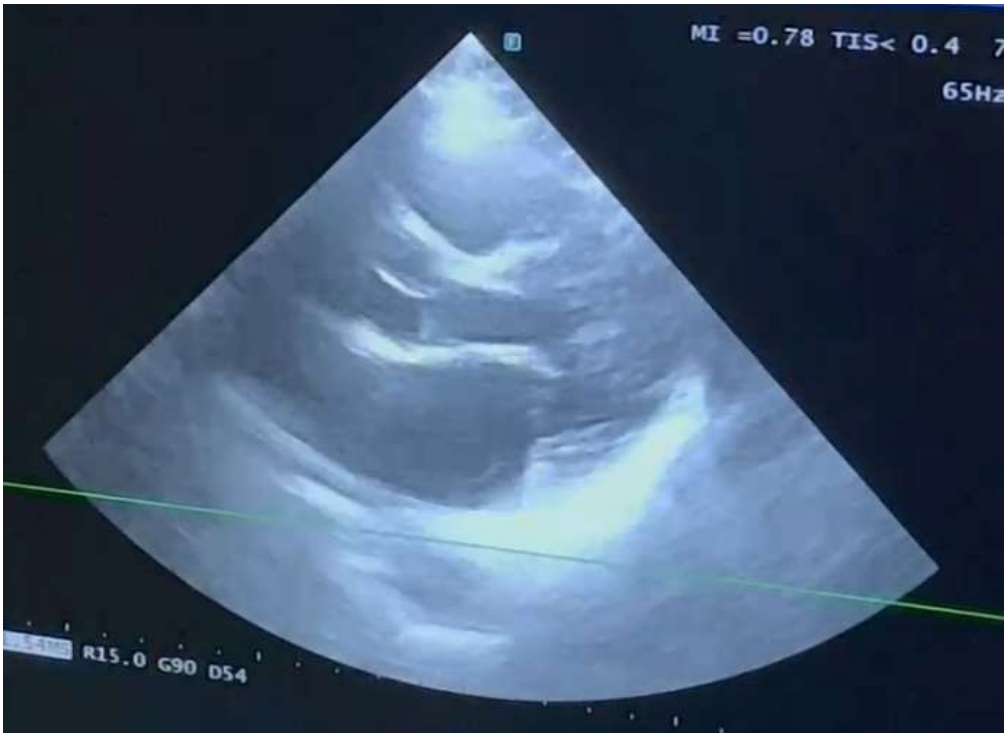


Fig. 4 Echocardiogram.

The patient was diagnosed with dextrocardia and situs inversus totalis based on clinical and complementary findings. Treatment was symptomatic. The patient was informed about her condition and scheduled for regular cardiology visits to monitor cardiovascular health and detect any changes.

DISCUSSION

Dextrocardia is a positional cardiac anomaly in which the heart is located in the right hemithorax, with its base–apex axis directed rightward and caudally. This condition may be associated with normal visceroatrial arrangement (situs solitus), a mirror-image configuration known as situs inversus, or occur with visceroatrial isomerism (situs ambiguus). In adults, dextrocardia is often an isolated, incidental finding—as in the present case.[6]

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6877

When differentiating dextrocardia according to situs type, it is known that situs solitus is usually accompanied by significant cardiac pathology, with affected individuals exhibiting symptoms such as dyspnea, orthopnea, cyanosis, or limb numbness. Situs ambiguus associated with asplenia syndrome often leads to immunological problems. Situs inversus is linked to Kartagener syndrome, making chronic productive cough, rhinitis, otitis, sinusitis, and recurrent respiratory infections common.[7,8]

According to Tejeda-Camargo et al.,[6] adult patients with dextrocardia may present atrioventricular blocks (AVB) and sinus node dysfunction, indications for permanent pacemaker implantation—similar to the general population without this condition. Their study of six patients found AVB to be the most frequent indication. This does not align with the present case, as the patient had no cardiac symptoms attributable to dextrocardia and no pacemaker was required.

Because it is often asymptomatic, initial suspicion usually arises incidentally during physical examination or chest X-ray. Further evaluation with more specific imaging—such as ultrasound, computed tomography, or magnetic resonance imaging—is necessary to assess for possible structural anomalies. Echocardiography is essential to determine the situs. In the case reported by Matías et al.,[9] the diagnosis was made through imaging studies, consistent with our findings.

In the case described by Ranqui-Rios ,et al.,[10] a girl born at 39 weeks' gestation was diagnosed via transthoracic echocardiogram with dextrocardia and situs solitus without other cardiovascular anomalies—unlike our case, which showed dextrocardia with chamber rotation.

Cardiovascular and gastrointestinal anomalies show the strongest association with situs inversus. The most common gastrointestinal comorbidities include cholelithiasis (13,6 %), colon cancer (5,8 %), and gastric cancer (5,2 %). Biliary atresia (4,7 %) was the most frequent congenital gastrointestinal anomaly.[11] In this case, the patient presented signs and symptoms of cholelithiasis; the gallbladder's position on the left side of the abdomen may influence biliary physiology and flow.

We agree with Arraut-Gámez et al.[12] that diagnosis in these patients is often delayed due to low clinical suspicion, leading to late-stage identification. In this case, the patient was unaware of her condition, which was discovered incidentally during imaging studies.

CONCLUSIONS

Dextrocardia is an uncommon congenital condition in which the heart is displaced to the right. The exact cause remains unknown. Situs inversus is often undiagnosed unless it is incidentally discovered during investigations for another medical condition. A systematic and comprehensive patient evaluation is essential for diagnosis. Imaging studies are crucial in establishing the diagnosis.

Authorship Statement

DMH: Conceptualization, resources, supervision, project administration, methodology design, writing—original draft, investigation.
EAHG: Investigation, writing—original draft, formal analysis, visualization, and editing.
SMRL: Investigation, writing—original draft, formal analysis, methodological advising.
LACD: Resources, project administration, investigation.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6877

Conflict OF Interest
The authors declare that there is no conflict of interest.

Funding Sources
The authors received no funding for the development of this article.

BIBLIOGRAPHIC REFERENCES

1. Lárez V, Mantilla Zambrano JM, Santis García EA, Olaya Rodríguez H, Acosta Peláez JD, Sánchez Cantillo JJ, et al. Revascularización miocárdica completa con injertos arteriales en un paciente con dextrocardia. Repert. Med. Cir. [Internet]. 2023 [citado 3/6/2025];32(2):168-72. Disponible en: http://dx.doi.org/10.31260/RepertMedCir.01217372.978

2. Singh A, Mukati R. Dextrocardia with Atrial Septal Defect: Interesting Echocardiography Images. J Card Crit Care TSS [Internet]. 2025 [citado 3/6/2025];9(1):55-60. Disponible en: https://jcardcritcare.org/dextrocardia-with-atrial-septal-defect-interesting-echocardiography-images/

3. Deshimo G, Abebe H, Damtew G, Demeke E, Feleke SA Case Report of Dextrocardia with Situs Inversus: A Rare Condition and Its Clinical Importance. Case Reports in Medicine [Internet]. 2024 [citado 3/6/2025]; 2024(1): 2435938. Disponible en: https://doi.org/10.1155/2024/2435938

4. García FF, Peñafiel Loor FI, Chávez Vuele GC, Chen Cedeño AZ. Apendicitis Aguda en Situs Inversus Totalis en Paciente Pediatrico: Reporte de un Caso. Ciencia Latina [Internet]. 2024 [citado 3/6/2025]; 8(5): 12123-31. Disponible en: https://ciencialatina.org/index.php/cienciala/article/view/14640

5. Gupta Sanjay, Handa KK, Kasliwal KK, RR, Bajpai P. A case of Kartagener's syndrome: Importance of early diagnosis and treatment. Indian J Hum Genet. [Internet] 2012 [citado 3/6/2025]; 18(2):263-7. Disponible en: https://doi.org/10.4103/0971-6866.100787

6. Tejeda-Camargo MJ, Arjona D, Rendón J, Olaya-Sánchez A, Cabrales M. Implante de marcapaso en paciente con dextrocardia y situs inversus. Desafíos y soluciones. Rev. Colomb. Cardiol [Internet]. 2022 [citado 4/6/2025]; 29(2): 231-234. Disponible en: http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0120-56332022000200231&lng=en.

7. Sánchez González A. Evidencia sobre la dextrocardia: revisión sistematizada. Journal Nursing Valencia Colegio Oficial de Enfermería de Valencia, Spain. [Internet]. 2022 [citado 4/6/2025]; 1(2022). Disponible en: https://www.journursval.com/index.php/jnv/article/view/6/articulo_5

8. Martinez Montalvo CM, Rojas Kozhakin DV, Pérez Hettinga MA, Galindo Escucha CS, Saumett Lopez SV, Ordoñez Lopez HE et al. Actinomyces y síndrome de Kartagener: Reporte de caso y revisión de la literatura. Acta méd. Peru [Internet]. 2022 [citado 4/6/2025]; 39(1): 73-78. Disponible en: http://www.scielo.org.pe/scielo.php?script=sci_arttext&pid=S1728-59172022000100073&lng=es.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(2025): e6877

9. Matías Castellón JM, Iglesias F, Morales D. Situs Inversus Totalis asociado con síndrome de preexcitación ventricular. Informe de caso. Rev Chil Cardiol [Internet]. 2020 [citado 4/6/2025]; 39(3): 266-269. Disponible en: http://www.scielo.cl/scielo.php?script=sci_arttext&pid=S0718-85602020000300266&lng=es.

10. Ranqui-Rios N, Garcia Y, Velazquez-Garcia L. Dextrocardia with Situs Solitus in a Neonate - an Overview. Archive of clinical cases [Internet]. 2023 [citado 4/6/2025]; 10(4):171–174. Disponible en: https://doi.org/10.22551/2023.41.1004.10268

11. Osarenkhoe J. Situs Inversus: Una revisión de 191 casos publicados. Open Journal of Internal Medicine [Internet]. 2022 [citado 5/6/2025]; 12(2) :85-94. Disponible en: https://doi.org/10.4236/ojim.2022.122010

12. Arraut-Gámez R, Gómez-Barrios J, Molinares-Perez D, Thorne-Vélez H, Caballero T. Apendicitis Aguda en Situs Inversus Totalis: Reporte de un Caso y Revisión de Literatura. Archivos en Medicina [Internet]. 2022 [citado 5/6/2025]; 18(5):1538. Disponible en: https://dialnet.unirioja.es/servlet/articulo?codigo=8540172