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Case Report

Congenital absence of ribs: Case report

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ABSTRACT

Congenital absence of the ribs is a relatively rare condition especially for the absence of upper ribs; it can be present as an isolated anomaly or part of many congenital anomalies like in "Poland Syndrome". Defects of the ribs do not occur alone; under development of vertebral column or absence of thoracic muscles can coexist. This is a report of a case of a full term male newborn with absence of 5th–8th ribs on the left side presented with transient tachypnea. Diagnosis was done by clinical examination and confirmed with three-dimensional computed tomography (3D-CT) reconstruction imaging.

Ausencia congénita de costillas: caso clínico

Palabras clave:
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RESUMEN

La ausencia congénita de costillas es una situación relativamente rara, especialmente cuando se trata de las costillas superiores. Puede presentarse como anomalía aislada, o como parte de malformaciones congénitas de tipo «síndrome de Poland». Los defectos en las costillas no se producen de manera aislada, sino que pueden coexistir con subdesarrollo de la columna vertebral o ausencia de músculos torácicos. Presentamos el caso de un recién nacido a término con ausencia de la 5.ª a la 8.ª costillas en el lado izquierdo, que se presentó con taquipnea transitoria. El diagnóstico se realizó tras examen clínico, confirmándose mediante imagen de reconstrucción con tomografía computarizada tridimensional (3D-TC).

Introduction

Congenital absence of the ribs is a relatively rare condition with very rare documented cases especially for the absence of upper ribs; it can be present as an isolated anomaly or part of many congenital anomalies like in "Poland Syndrome". Only few cases had been reported with absent ribs in Poland syndrome. Poland syndrome is a rare congenital disorder characterized by ipsilateral absence of pectoralis major muscle. This syndrome is associated with various anomalies such as ipsilateral syndactyly, brachidactyly, dextrocardia, herniation of lung, underdevelopment of upper ribs, aplasia or hypoplasia of breast, etc.

Generally, defects of the ribs do not occur alone. They are mostly associated with failure of development in the vertebral column and muscles of thoracic wall and the pleura are also frequently involved. Scoliosis is often present. Here we report a full term male newborn with absence of 5th–8th ribs on the left side with transient tachypnea. Diagnosis was done by clinical examination and confirmed with three-dimensional computed tomography (3D-CT) reconstruction imaging.

Case report

A full-term male newborn was born after a normal pregnancy and cesarean section (gestational age 40 weeks, birth weight 3150 g). There was no relevant family history with negative consanguinity.

Routine physical examination was done, Systolic blood pressure was 95 mmHg, heart rate 140 Beats/min and respiratory rate was 64 Resp./min. Close monitoring and good oxygenation of the newborn were done. Chest examination showed asymmetrical chest respiratory movement with detected left middle thoracic region collapse during inspiratory movement, but the thorax regained symmetry in the expiratory phase. Palpation showed intact skin and subcutaneous tissue on left side of the thorax with non-palpable middle ribs on the left side on both anterior and posterior aspects. No inspected cyanosis or intercostal, subcostal or supra-clavicular muscles retractions. Auscultation of normal and symmetric breath sounds bilateral with no adventitial sounds. Cardiac examination showed normal regular heart rhythm without murmurs. The abdomen was lax on palpation, without palpable

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Figure 1. Plain Chest X-ray showing absent 5th–8th ribs on left side.

hepatosplenomegaly. Vertebral column and limbs had no obvious deformity. Muscle force and tension were within normal ranges.

Plain chest X-ray showed normal lung fields with absent 5th–8th ribs on left side (Fig. 1), Plain chest Computed Tomography with 3D reconstruction (3D-CT) showed the complete absence of the left 5th–8th ribs, while the rest of the ribs had no deformities (Fig. 2). No lung anomalies were detected. Echocardiography showed no intra cardiac congenital anomaly. Pelvic-abdominal ultrasound was done showing normal hepato-biliary system, pancreas, spleen, kidneys, ureters, and bladder. The infant was vitally stable with good feeding and in good health condition after one week of admission and routine clinical examination.

Discussion

Congenital anomalies of ribs are not that common. Congenital absence of ribs is a rare condition without a certain etiology. It may be related to impaired blood supply during embryonic period, the absence either includes a segment or the whole rib, the underdevelopment of ribs is more common than the complete absence of ribs. The congenital absence of ribs is usually unilateral, it can involve the absence of single, multiple or even the whole thoracic cage and the first rib is usually unaffected. Supernumerary ribs, especially in the cervical region and less frequently in the lumbar region, are more often seen.[1] As a rule defects of the ribs do not occur alone. There is usually some corresponding failure of development in the vertebral column, the muscles of the thoracic wall, and the pleura are also frequently involved. Scoliosis is often present.[2] This is the first reported case of a full-term Egyptian newborn with congenital absence of the left 5th–8th ribs.

Diagnosis of rib deformity should be detected by the neonatologist at time of birth, superior rib deformities are easier to be detected that inferior ribs ones. However the diagnosis of rib deformities is highly vital to early avoid their complications. The absence of superior ribs can lead to thoracic scoliosis which affects the motor coordination and appearance. Deformities of inferior ribs have more serious complications like poor cardiac ejection fraction and lung herniation that may leads to recurrent chest infections, tachypnea, and dyspnea with very poor prognosis in such cases.[3–5] In our case, the absence of the left 5th–8th ribs did not affect the respiratory and cardiovascular functions. This may be because the inferior ribs were not included.

Diagnosis of absent ribs can be done by clinical examination, plain chest X-ray and confirmed by CT chest with 3D bone reconstruction. 3D-CT is vital to detect minor deformities and exclude

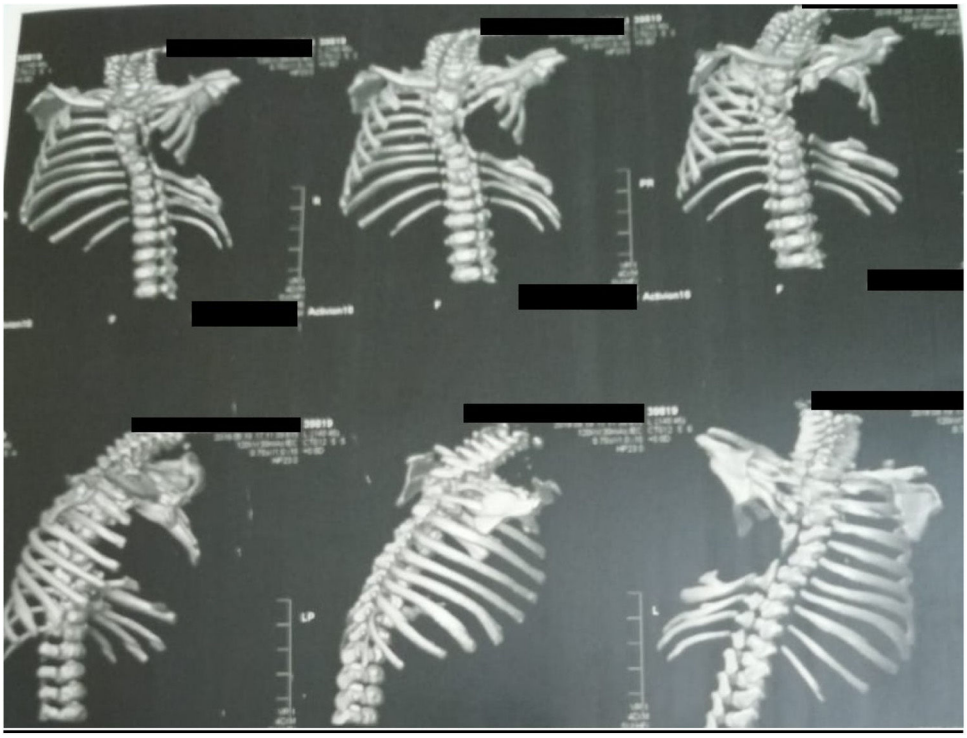

Figure 2. CT chest with 3D reconstruction showing complete absence of left 5th–8th ribs while the rest of ribs are normal.

lung anomalies.[6] Congenital absence of ribs can be a part of other multiple congenital anomalies like trisomy 13 which has other malformations of the face and other regions and Poland Syndrome which includes absence of Pectoralis muscles and anomalies of the fingers. Regular routine skeletal examination and chest radiography can reduce the risk if missed diagnosis of congenital anomalies of ribs; although, 3D-CT is vital in confirmation of diagnosis as it can detect minor anomalies and exclude lung anomalies.[7] Therefore, we performed 3D-CT reconstruction in addition to plain radiography to confirm our primary diagnosis and exclude lung anomalies.

Many anomalies may company congenital absence of ribs.[8] In our case echocardiography and pelvic-abdominal ultrasound in addition full clinical examination and the already done 3D-CT to exclude multiple anomalies. Fortunately, no other obvious congenital anomaly was detected.

Conclusion

In conclusion, the congenital absence of ribs has been reported in few studies. In our case, the neonate did not present with any specific complications such as secondary dyspnea or poor cardiac ejection fraction. We recommend routine skeletal examination and plain chest radiography for neonates to reduce missed diagnosis and 3D-CT reconstruction as an effective tool to confirm the absence of multiple ribs.

Ethical consideration

The study was approved by the ethical committee of the faculty of medicine Suez Canal University.

The permission of the Suez Canal University hospital was taken.

Informed verbal voluntary consent from participants was obtained.

The participant was informed that he/she has the opportunity to decide to consent or not without intervention of any element of force, fraud, deceit, duress, or undue influence on the subject decision.

Information confidentiality was kept in analysis and data collection.

The techniques used in data collection, investigations were not harmful to screened population

The research material and information was shared with others aiming advances in medical knowledge.

Conflict of interest

None declared.

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