

ACCESSORY INTRATHORACIC RIBS- A QUIANT ANATOMICAL VARIATION

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PRESENTATION OF CASE

Ribs are cordon like bony structures which form a custodial paddock for the major intrathoracic organs. The embryological emanation is from sclerotome portion of paraxial mesoderm. Ribs anomalies are reasonably common with approximately one percent of the general population exhibiting these.¹ Proverbial rib anomalies are cervical ribs, bifid ribs, rib dysplasia and intercostals fusion. Accessory intrathoracic rib is a very rarefied rib anomaly which is a congenital disorder. It is generally discovered accidentally, and it is asymptomatic in most of the cases. Its understanding can aid us to prevent miscomprehending them as other of thoracic disorders like consolidations, pleural based lesions, lung parenchymal lesions and other pathological bony lesions during diagnostic imaging techniques.

CLINICAL DIAGNOSIS

A 48-year-old non-addict lady followed up to our centre, in view of symptoms of 3-4 years duration in form of Dyspnoea on exertion associated with wheeze and cough with mucoid expectoration with history of exacerbation of symptoms on dust and cold exposure. She was a diagnosed case of retroviral disease since 10 years, she had past history of pulmonary tuberculosis 10 years ago which was treated with Category II anti-tubercular therapy (ATT). Patient's vitals were normal. The respiratory system examination was normal except for bilateral crackles and rhonchi. Post exercise desaturation was present. Chest radiograph (CXR) posteroanterior view was suggestive of right upper zone fibrocystic opacity with abnormal bone near the posterior ends of the forth to the sixth ribs (Figure 1). The routine hematological and biochemical blood investigations were normal. Her CD4 count was 492 cells/UI. Total Serum IgE-185.3 IU/ml. Sputum examination was negative for acid fast bacilli (AFB). High resolution computed tomography (HRCT) Thorax was suggestive of post infectious fibrocystic destruction of apical and posterior segment of right upper

lobe with volume loss and compensatory overinflation of right middle lobe and lower lobe with tubular bronchiectasis with peribronchial thickening and distal patchy mucoid impaction seen in both lungs with lower lobe predominance. Diffuse air trapping was seen in both lungs. The bony cage showed osteoporosis with an accessory rib seen arising exophytically from the posterior aspect of expanded right 4th rib and in close contact with posterior aspect of right 6th rib with eventration of right hemidiaphragm. The reconstruction bone algorithm is depicted in Figure 2.

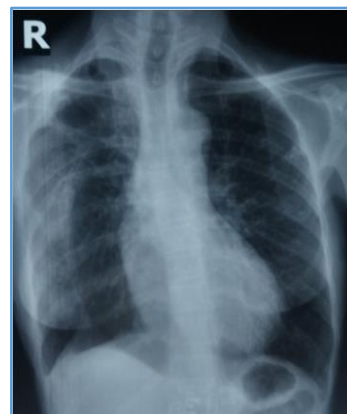


Figure 1

Figure 1. Chest X-ray Posteroanterior View Suggestive of Right Upper Zone Fibrocystic Opacity with Accessory Rib Arising from Right 4th Rib.



Figure 2

Figure 2. The reconstruction bony algorithm of computed tomography of thorax bony cage showing an accessory rib seen arising exophytically from posterior aspect of expanded right 4th rib posteriorly in close contact with posterior aspect of right 6th rib.

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DIFFERENTIAL DIAGNOSIS

The intrathoracic rib is generally an incidental and accidental finding however in some cases it can be associated with other variation like as bone dysplasia, cervical rib, dysplasia and malformations of the thoracic vertebrae as far as the diaphragm. Thus, the intra thoracic ribs should be considered in the differential diagnosis of pleural and lung disorders and other peripheral lung parenchymal lesions.

PATHOLOGICAL DISCUSSION

Accessory intrathoracic ribs are uncustomary congenital variations of ribs which can arise either from vertebra or a rib. Accessory ribs can be supernumerary or normonumerary which follows abnormal course in intrathoracic cavity.² Sometimes it may be associated with vertebral anomalies.³ Till date 50 cases of intrathoracic rib have been reported in the literature so far after first reported in 1947. They arise due to inappropriate segmentation during embryonic development of axial skeleton. These entities are usually clinically silent but can be detected incidentally on imaging studies. Approximately, one third cases are seen in children. It is generally seen in all age group of patients and it is independent of sex, more common unilateral, generally on the right side and incline to affect only one rib. Intrathoracic ribs usually origin from the posterior and inferior aspect of the normal rib or vertebral body. The precise reason for this rib variation is unknown. During embryogenesis incomplete fusion between adjacent sclerotomes and also alteration of intrathoracic or extrathoracic pressure in the embryo^{4,5,6,7} result in formation of intrathoracic ribs between fourth week and sixth week of fetal life. Some cases are associated with genetic variation.

Recently, classification of abnormal ribs has been proposed by Kamano et al² according to the location and the origin of ribs and explains four types:

Type IA	Those articulated with the vertebral body
Type IB	Those originate from the posterior part of the rib
Type II	Bifid intrathoracic ribs
Type III	Intrathoracic ribs caused by a costal depression into the thoracic cavity

Table 1

Our case is IB since the unusual rib is originated from posterior part of the fourth rib. CT is very useful in

diagnosing these anomalies. Some authors have reported intrathoracic ribs via CT scans and three-dimensional reconstructions.⁶ So, discovering of this anomaly may prevent further unwarranted additional evaluation and investigation.

DISCUSSION OF MANAGEMENT

Our case thus was a rarefied example of an unorthodox anatomical rib variation which was incidentally discovered during the evaluation process of a post tuberculosis sequel.

As intrathoracic ribs are incidental finding and generally it is harmless condition, so no active management is required for this condition. However, the underlying lung pathology should be managed. In our case the underlying post tuberculosis sequel was managed with inhaler therapy along with oral theophylline and retroviral disease is managed with anti-retroviral therapy. Thus, anatomical variation of intrathoracic ribs should be kept in mind while diagnosing other lung pathologies as this is an unorthodox and rare anomaly of ribs.

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