

## LUMBAR RIB: AN UNCOMMON CAUSATION OF A COMMON MANIFESTATION

### COASTA LOMBARĂ: O CAUZĂ NEOBIȘNUITĂ A UNOR SIMPTOME OBIȘNUITE

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**Cuvinte cheie:** coastă suplimentară, coaste Supera Numerary, coastă lombară, dureri renale, sindrom DASK

#### Abstract.

**Background.** Lumbar rib is a very rare anomaly of the ribs characterized by an extra rib arising from lumbar vertebrae. Extra rib/ supra rudimentary ribs when present usually arise from cervical vertebrae, although sacral, coccygeal and intrathoracic ribs have also been reported.

Lumbar ribs arising from vertebrae may be mistaken for kissing osteophytes, transverse process anomalies or abdominal vessel anomalies. Adequate knowledge of this condition is therefore important for further research.

#### Rezumat.

**Introducere.** Coasta lombară este o anomalie foarte rară a coastelor, caracterizată prin existența unei coaste în plus, care pornește de la vertebrele lombare. Această coastă suplimentară sau suprarudinemtară, când este prezentă, de obicei pornește de la vertebrele cervical, deși s-a remarcat și prezența vertebrelor ce porneau din zona sacrată, coccigeană sau intratoracică.

Coasta lombară care pornește de la vertebre, poate fi confundată cu osteofiți, anomaliile proceselor transverse sau anomaliile ale vaselor de sânge. De aceea, cunoașterea aprofundată a acestei anomalii este important pentru cercetări viitoare.

#### Introduction

Although rib anomalies are most uncommon, and are reported to occur in 1% of the normal population<sup>1</sup>; lumbar rib is rare anomaly with no reported incidence. This condition was first described by John Cumming, chief Police Surgeon in 1926, based on radiograph finding.<sup>2</sup>

A lumbar rib may unite with the ventral surface of the transverse process or the tip of a short transverse process. Although usually rudimentary, it may occasionally be elongated. But lumbar ribs are less important clinically than cervical ribs and are usually mere rudiments. An extra levator costae muscle is reported associated with a lumbar rib. In 559 skeletons of the Washington University collection, 8.8% had lumbar ribs.<sup>3</sup>

Until date, it has not been mentioned that lumbar rib can result in pain in renal angle. Hence this interesting and informative case is being reported not only for its rarity but also for its novelty for being the first such case to be reported in India; to the best of our knowledge.

#### Case report-

A 62 year male presented to Physiotherapy for treatment of pain in lower thoracic and lumbar region. Back pain was associated with radiating pain in the left groin as well as the thigh.

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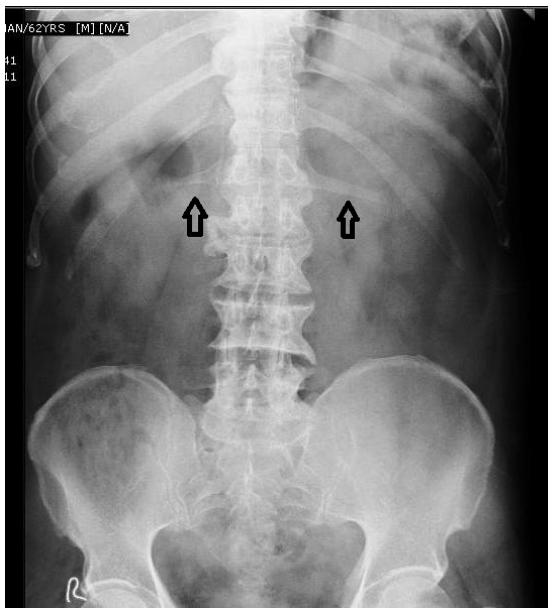
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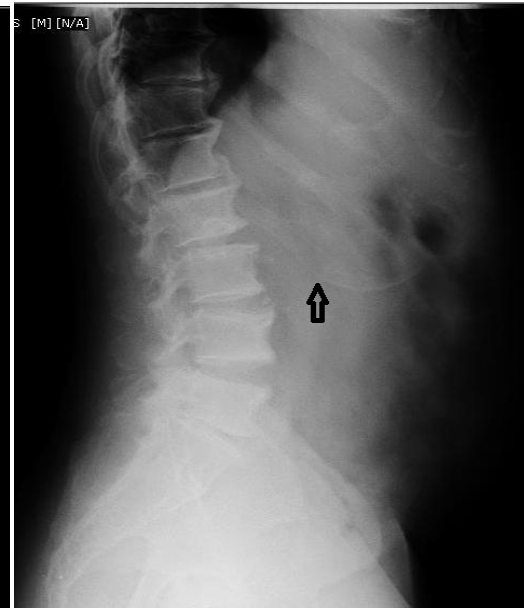
There was no history of trauma, unaccustomed work or physical strain. There was no fever or recent weight loss. Physical examination of the spine revealed neither any postural deformity nor any abnormal bony prominence. Palpation revealed paraspinal muscle spasm in the lower thoracic and upper lumbar region and bony tenderness over L1 to L4 spinous processes. Neuro-muscular status checked by straight leg raising test and bilateral leg lowering test was found to be poor. The gait was however, normal.

Laboratory tests like complete blood cell count & ESR were all within normal limits. His personal, medical, surgical and family histories were unremarkable.

Clinically, the patient was diagnosed as a case of chronic lumbar spondylosis with radiculopathy and underwent physiotherapy for 5 days. During this period; the patient received shortwave diathermy, extension exercises and ergonomic advice; at the end of which there was still no relief.



**Fig.1**



**Fig.2**

Anteroposterior and lateral plain radiographs of the spine were advised. Radiograph of thoraco-lumbar region (Fig.1, Fig.2) demonstrated linear radio-opaque out growths (upright black arrow) resembling ribs on either side of the L1 vertebra. Plain radiograph of the entire spine was done to confirm the location of L1 vertebra and to rule out the possibility of any transitional vertebra. Thus these additional rod like radio-opacities were conformed to be extra floating ribs at L1 vertebrae which is a very rare anomaly and has lack of sufficient evidence online. A lumbar rib can be differentiated from the thoracic rib by noting its length which is nearly half or less than half of the adjacent thoracic rib and its course that is more horizontal to begin with [as seen on PA view] and tapers upwards as it terminates distally [as seen on lateral view]. Contrary to this, thoracic ribs are slanting downwards to begin with and continue this downward slant until their termination as well.

These radiographs in addition also demonstrate how this lumbar rib presses on the adjacent kidney and this persistent mechanical irritation manifests as pain along the renal region bilaterally. Degenerative changes in the spine in the form of osteophytes too would be a contributing factor for backache. But typical renal angle pain in this patient can be explained only by the presence of this lumbar ribs.

## Discussion

Cervical ribs are known to produce neurological and vascular symptoms but lumbar rib are not known to cause any such grave symptoms. They may form a differential diagnosis to fracture of a transverse process.

Lumbar ribs most commonly arise from first lumbar vertebra, although it has been reported to arise from the second<sup>4</sup> and third vertebrae<sup>1</sup> as well.

Bettenhauser reported a case of an aberrant rib in the lumbar area overlying the right ilium which was not connected to the vertebral column.<sup>5</sup> Rudimentary ribs have also been reported at the sacral site<sup>6</sup> and coccyx<sup>7</sup>.

John Cumming<sup>1</sup> in his report mentioned about a lumbar rib arising from the transverse process of the third lumbar vertebra which was fused with transverse process of the fourth lumbar vertebra of the same side.

In the case reported by us a lumbar rib was arising from the first lumbar vertebra on either side. It was, floating and had a similar appearance to other ribs, although a dissimilar course. As per the previous reports extra lumbar ribs produced no symptoms or structural deformity and were of no apparent clinical significance. In our case; symptoms of backache may be because of degenerative changes at various lumbar levels. But renal angle pain is only explainable by the presence of lumbar rib.

Extensive literature search on rib anomalies indicated that the association of bilateral lumbar ribs resulting in bilateral renal angle pain is unique. Therefore we propose that this syndrome in which abnormal lumbar rib impart mechanical pressure on the adjacent kidneys and cause persistent pain be labelled as the DASK Syndrome [Deepak Anap –Sushil Kachewar] syndrome after the researchers who first discovered and reported this entity. Such naming is permissible and is in the better tradition of scientific naming.<sup>8</sup>

Thus while renal stones and infections are the commonest causes of renal angle pain, one must also keep in mind the DASK syndrome and try to demonstrate it. Lumbar rib resection can give a permanent solution to this clinical presentation. In the case reported here, the patient has been counseled to undergo rib resection if the renal pain hampers his day to day activities. He is still undecided about the procedure, and we cannot force him to undergo this.

Lumbar ribs are a common finding in standard developmental toxicology bioassays that are performed globally.<sup>9</sup> Apart from chemical and physical agents that can induce lumbar rib formation; maternal factors like stress alone can play such a role. Lumbar ribs are associated with longer ribs, increased numbers of vertebrosteral ribs, and the presence of extra presacral vertebrae. This rib has a cartilaginous segment at the distal end, and an ossification site that lacks cartilage and hence are permanent structures in contrast to ossification sites that disappear postnatally, probably becoming part of the lateral transverse vertebral processes. Although what causes extra ribs is not understood at this time, although the fact that the early sensitive periods for their initiation during embryogenesis is coupled with the associated changes in the axial skeleton argues for their induction being due to fundamental changes in gene expression.<sup>9</sup>

Though it's very difficult for physical therapist to diagnose the condition only on clinical examination, patients with renal angle pain can be suspected for the lumbar rib, particularly when ultrasound scan of the abdomen in such patients demonstrate no explainable cause of renal angle pain. Plain radiography in such cases can be the problem solving diagnostic modality.

**Declaration of Interest:** The authors report no conflicts of interest'.

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