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Slipping Rib syndrome: A rare presentation of abdominal pain

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Abstract

Slipping Rib Syndrome (SRS) is a rare medical condition often misdiagnosed due to limited awareness in the medical field. This particular case study showcases an unusual presentation of SRS with gastrointestinal symptoms. SRS occurs when the false ribs have unstable connections, causing irritation or pressure on intercostal nerves and soft tissues, resulting in sharp, spreading pain that worsens with physical activity. Diagnosis of SRS primarily relies on clinical evaluation as imaging tests may not provide clear results for mild to moderate cases. Treatment options range from conservative approaches to surgical interventions. Enhancing awareness and utilizing appropriate clinical assessments is crucial to avoid unnecessary investigational procedures and patient distress.

Keywords: SRS: Slipping Rib Syndrome; Rib subluxation; Intercostal neuritis; Musculoskeletal chest pain; Slipping Rib syndrome associated gastrointestinal symptoms.

Introduction

The term "Cyriax Syndrome" was introduced by Edgar Ferdinand Cyriax in 1919, later renamed "Slipped Rib Syndrome" by surgeon Robert Davies-Colley in 1922 [1,2]. Over the years, Slipping Rib Syndrome (SRS) has been referred by a variety of terminologies throughout the medical literature as Clicking rib syndrome, Rib-tip syndrome, Painful rib syndrome, Slipping-rib-cartilage syndrome, gliding ribs, Nerve nipping, Traumatic intercostal neuritis, Twelfth rib syndrome, or Cyriax syndrome [3]. Despite being known by various names, Slipping Rib Syndrome (SRS) accounts for approximately 5% of gastroenterological consultations and 1% of general medical visits. SRS is frequently overlooked by many healthcare professionals owing to the lack of awareness of its existence [4]. Even though SRS can occur at any age, it is more common in athletes and middle-aged individuals [5,6]. SRS is described as a constellation of symptoms due to inflammation or compression of intercostal nerves to the unstable cartilaginous attachments of false ribs (T8-T12). The classic presentation of SRS is characterized by a sharp and excruciating pain near the sternocostal margin, radiating along the costal or sternal margin to one or both sides, or upper abdomen. It may be associated with a 'rib jumping out of place' sensation or clicking/popping sounds and is often preceded by an exacerbating event such a coughing, sneezing, vomiting, heavy lifting or twisting, flexing or bending the trunk to one side. The pain may become debilitating, dull and burning in the long run. Relief from pain is achieved by extending the affected side of the trunk, deep breathing in a prone position or prolonged rest [3,7,8].

The etiology of SRS includes trauma [9], developmental and congenital chest anomalies [9-12], iatrogenic causes [13], respiratory illnesses such as bronchitis [14], and joint laxity secondary to hormonal changes [15]. The unilateral variant of SRS occurs most commonly from external strains pressurizing the rib cage whereas the bilateral variant arises secondary to internal strains such as persistent coughing, vomiting or pressure from a gravid uterus [14]. The overlapping connections between intercostal nerves and somatic visceral nerves at the same spinal cord levels as that of the slipping ribs, particularly the eighth and ninth rib, may explain the indistinct nature of pain associated with this condition which may lead to false perception of pain as being intrabdominal in nature [3].

Case presentation

In April 2024, a 27-year-old man presented with a four-and-a-half-month history of a bilateral, intermittent, pain on both sides of his lower rib cage and epigastric region. He could not recall any preceding event that may have aggravated his pain. The pain had a dull and burning character and was confined to the initial site, without radiation or shifting to any adjacent areas. Notably, the pain showed a positional dependency, with exacerbation by movement, sitting or leaning forward and alleviation by standing or extension of the thoracic spine. Further, he experienced stomach cramps, gastroesophageal reflux disease, constipation, and insomnia corresponding with his pain suggesting a potential visceral-somatic interface. He had a past medical history of acid peptic disease which coincided with his initial complaint of pain in December 2023. His helicobacter pylori stool antigen test was positive for which triple eradication therapy was commenced for two weeks.

Diagnosis

Diagnosis of SRS is mostly clinical where the pain can be reproduced via Valsalva or Hooking maneuver. A positive hooking maneuver or dynamic ultrasound with Valsalva provide the most accurate diagnosis for SRS [12,16]. Additionally, the possibility of utilizing ipsilateral rectus abdominis atrophy on abdominal ultrasound as a new diagnostic sign in SRS is being evaluated as well [17]. In most cases, radiological approaches such as X-Ray, Computed Tomography Scan, Magnetic Resonance Imaging, and Positron Emission Tomography Scan bear negative results during evaluation of the cause of such pain [3,4,18]. The diagnosis of the patient was based on his clinical examination. Figure 1 exhibits an anteroposterior view of his abdominal x-ray in supine and erect position revealing normal soft tissue densities, bowel gas shadows and no sign of bowel obstruction or perforation. Figure 2 illustrates his abdomen ultrasound showcasing a normal anatomy of hepatobiliary system, pancreas, spleen, intestinal loops, kidneys and urinary bladder. These findings were significant in establishing his diagnosis as a positive hooking maneuver with no underlying cause on radio imaging (as illustrated in Figures 1 and 2) provided a plausible explanation for a connection between the patient's lower chest pain and gastrointestinal symptoms, which could occur secondary to a dynamic compression of stomach or small bowel by the subluxated ribs.

Management

The patient was diagnosed with SRS four months after his initial complaint. He was counselled regarding his condition and treatment options. Later, he opted for medical therapy over surgical intervention and was managed via non-steroidal anti-inflammatory drugs, antacids and prokinetics for relief of his pain

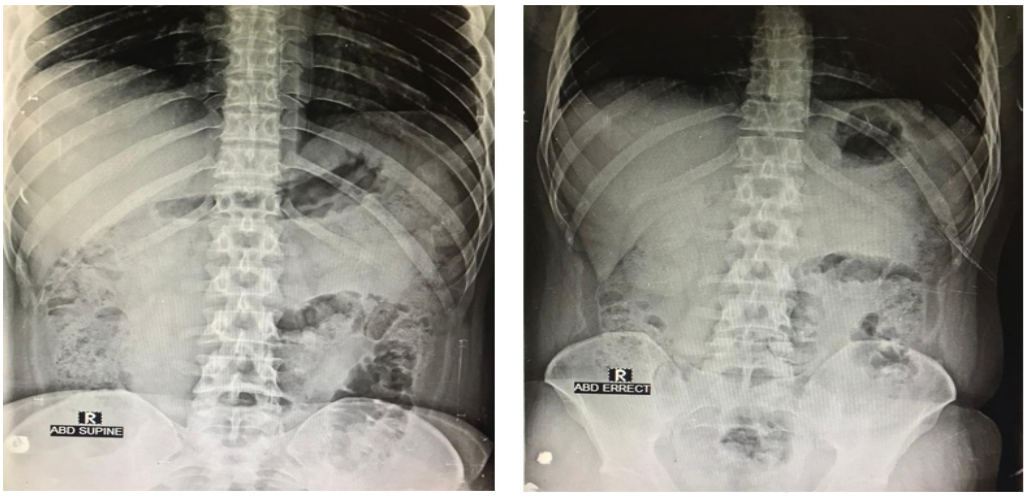

Figure 1: An anteroposterior view of patient's abdominal x-ray in supine and erect position.

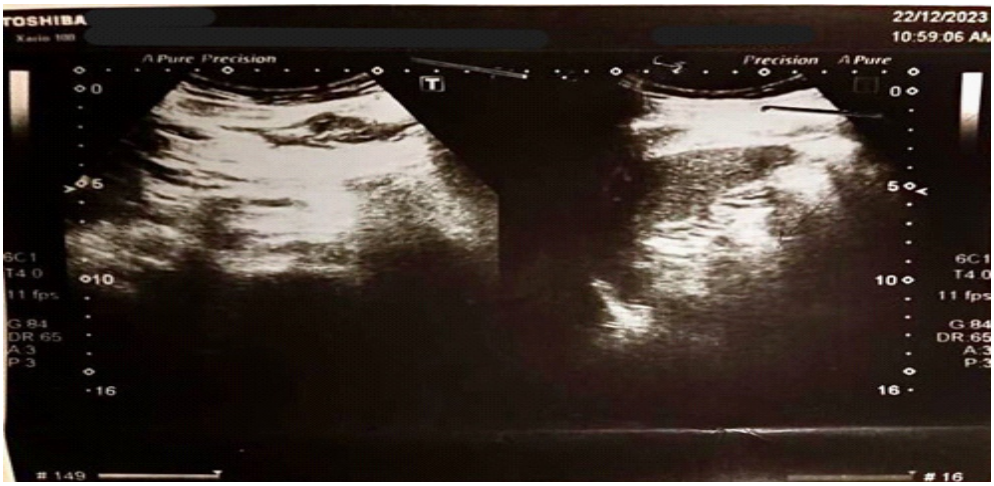

Figure 2: An abdominal ultrasound of the patient in supine position.

and gastrointestinal symptoms. Further, he was advised regarding precautionary measures such as avoidance of extreme physical exertion such as heavy lifting and application of ice pack or topical analgesics in case of an unprompted exacerbation of lower chest and upper abdominal pain as his symptoms were persistent up till this point in time. Subsequently, he showed a significant improvement overtime and has remained symptom-free thereafter.

Discussion

Owing to the site of pathology, the differential diagnosis of SRS implicates both chest wall and abdominal pathologies which diversifies the differential diagnosis [3,5,9,19-22]. Such cases demand an open-mindedness from healthcare professionals while reviewing all possible factors, even if they may seem highly unlikely. SRS is a mechanical cause of pain [14] which often gets misdiagnosed due to lack of awareness and vague nature of the condition, leading to unnecessary imaging studies and invasive procedures which includes thoraco-abdominal CT scan, PET scan, MRI, endoscopy, or exploratory laparotomy. It is important to note that most of these investigations often bear negative findings and are utilized only to avoid differential diagnosis. This could lead to frustration among both healthcare workers and patients alike, arising from an unexplainable cause of pain [12,23]. To conclude, creating awareness of such conditions can prevent unnecessary radiation burden on the patient and can lead to an early intervention and effective treatment. The adage "When you hear hoof beats, look for horses, not zebras" is often employed during medical training to highlight the importance of considering the most likely diagnosis rather than jumping to rare or exotic ones. However, previously unforeseen conditions are becoming more relevant in the current medical practice, making balanced and strategic diagnostic approach a holistic need of the contemporary era.

Declarations

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Resources: Amna Ashraf.

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