

Diagnosing and treating Slipping Rib Syndrome: An unusual case of undiagnosed pain for 5 years

Dineth Wijesiriwardena, Azar Hussain, Mahmoud Loubani and Syed Sohail Qadri

Castle Hill Hospital, United Kingdom

Abstract

This case report summarizes an unusual case of Slipping Rib Syndrome. A 39-year-old athletic female patient presented with symptoms of ongoing chest and abdominal pain over the last five years. Diagnosis was delayed due to the unusual nature of the condition. She was eventually diagnosed with Slipping Rib Syndrome with the aid of a CT scan as a diagnosis of exclusion and was finally treated with surgical resection of the rib.

Background

Despite being first reported in 1919 by Cyriax, Slipping Rib Syndrome remains a difficult diagnosis. Slipping Rib Syndrome results from displacement of the 8th, 9th and/or 10th rib which is either due to congenital hyper-mobility of ribs or a disruption of the interchondral articulations [1]. As the ribs do not attach directly to the sternum, being false ribs, they are more likely to be mobile and can impinge on the intercostal nerves. However, the rib can be detached from above rib by regular strenuous exercises or a strong cough. The true prevalence of Slipping Rib Syndrome is unknown due to inadequate data and this often resulted in patients undergoing multiple unnecessary investigations and only delays treatment.

Case Presentation

A 39-year-old active female patient was referred to the thoracic surgery department of Castle Hill Hospital for with a five year history of on-going pain in her right lower chest and right upper abdominal quadrant. The pain was continuous, sharpened in nature, exacerbated by exertion or bending forward, with referred pain to the right scapula. She is a professional runner who used to run 25-40 miles. However she is not able to run more than 10 miles due to this pain. The patient had previously been under the care of the Gastroenterology team who investigated her for a gastrointestinal cause, performing numerous investigations. All her blood tests were unremarkable. Abdominal ultrasound revealed a benign haemangioma measuring 1 centimeter but was otherwise unremarkable. She also underwent an endoscopy and colonoscopy both of which were also unremarkable. She then underwent a HIDA scan, querying biliary dyskinesia however this too was normal. While undergoing these investigations her pain was managed with a trial of buscopan however this proved to be ineffective. Having ruled out a gastroenterological cause the gastroenterology team then further referred her to the thoracic surgery team, suspecting a possible case of slipping rib syndrome. Once under the care of the thoracic surgery team she was seen in a clinic where on examination it was noted that the 9th rib could detach itself from its capsule attaching to the 8th and 10th ribs. A popping sensation was noted on examination of the rib. A depression in the region was also observed which was tender on palpation of the surrounding ribs. A decision was made to proceed with a CT thorax with 3D reconstruction in order to detect any defect. The CT scan showed no positive findings [Figure 1].

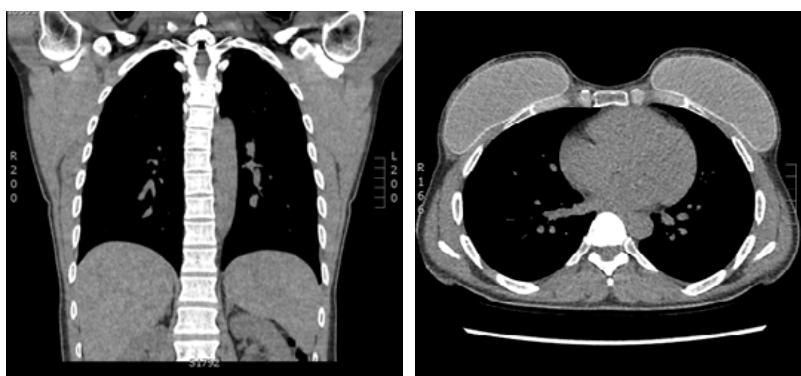


Figure 1: Transverse and coronal planes of CT Thorax which showed no abnormalities.

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Diagnosis and Treatment

After diagnosing the patient with slipping rib syndrome with a physical examination test called the hooking manoeuvre and discussions with the patient it was decided for her to have a partial rib resection as the patient said she could no longer tolerate the pain. She underwent an open surgical resection of the rib under general anaesthesia.

Post-op the patient was kept in recovery and then was transferred to the ward. No ICU admission was required. Her recovery was unremarkable but did suffer from some post op pain which was managed with oral analgesia and intercostal nerve blocks. She underwent daily physiotherapy and was discharged after 4 days without incident with a three week follow up in clinic. At her two-week post-operative visit, she denied shortness of breath and pain.

Discussion

At the moment there have been very few established cases of Slipping Rib Syndrome and very limited literature on the subject. As observed, the location of the pain can mislead many clinicians and thus results in patients having to undergo several unnecessary investigations. Pain is usually a result of impingement of intercostal nerves and external movement of free ribs with breathing and cough. Slipping Rib Syndrome is known to have several differential diagnoses such as fractured ribs, Tietze syndrome, costochondritis, pleuritic pain and other GI causes [1]. Unfortunately, there are no laboratory or obvious radiological findings for Slipping Rib Syndrome, and this is one of the contributing factors to a delayed diagnosis. It is mostly diagnosed after clinical examination where you feel mobile and tender lower rib and gap between ribs as compared to the other side, this physical examination is called the hooking manoeuvre.

The pathophysiology of the syndrome has been investigated. The anatomy of the ribs was all examined, and it was noted that the rib tips did not sublux unless the articulations have been disrupted. They also noted the cartilage ends of ribs curl up inside the ribs and therefore come into close contact with the intercostal nerves. The fibrous coverings surrounding the synovial membranes of the interchondral cartilages of the 8th, 9th and 10th ribs also involve the terminal branches of the intercostal nerves. This proved that the pain was a result of repeated and frequent irritation of the intercostal nerves [2].

A previous study observing 362 athletes with rib pain retrospectively found 54 cases of Slipping Rib Syndrome with the hooking manoeuvre confirming diagnosis in 38.9% of patients. The study also found a high incidence in females (70% incidence) [3]. A thorough history is required, investigating a history of previous trauma and significant exercise history. Some patients will notice worsening pain or a popping/grinding sensation on certain movements. A more specific test to aid in the diagnosis is the hook manoeuvre whereby the examiner places their fingers in the subcostal area, pulling anteriorly. The positive result for the test is pain or clicking. Following the hooking manoeuvre, a nerve block is used. If there is relief on doing the hook manoeuvre following the nerve block it increases the likelihood of the diagnosis being Slipping Rib Syndrome [4].

In a similar previous case the diagnosis was only reached using this manoeuvre [5]. Dynamic ultrasound may be of some aid where the patient performs several movements and the movements of ribs are monitored. A study by Van Tassel et al concluded that “Dynamic ultrasound of the ribs, particularly with crunch and push manoeuvres, is an effective and reproducible tool for diagnosing SRS” [6].

In terms of treatment there are very few options. Initially conservative treatment should be attempted such as pain relief via NSAIDs, opioids or anaesthetic/steroid rib blocks. Other alternative options include reassurance and advice on avoiding certain postures and manual therapy by a chiropractor or physical therapist. If the conservative treatments fail, resection of the rib is the final resort.

The case presented, is an example of how slipping rib syndrome is presented and managed. The lack of awareness about the condition led to a delayed diagnosis, affecting the patient's livelihood for a period of 5 years. Fortunately, the clinician who diagnosed her had managed a case of slipping rib syndrome previously. The patient opted for surgical interventions given the other treatments were not definitive and she wanted treatment as soon as possible. Had the case been diagnosed earlier she might have tried the less invasive options of treatment. Thus, it is important to have slipping rib syndrome as a differential for cases of undiagnosed chest or abdominal pain.

Learning Points

- Slipping Rib Syndrome is an elusive diagnosis and clinicians need to be aware of it.
- It is a clinical diagnosis which requires a thorough history, clinical examination and a special test, the hook manoeuvre.
- The only definite treatment is a resection of the rib.

Patient's Perspective

“In the case I have struggled for nearly five years with this pain and only since moving back to England did I find out after being referred to Mr. Qadri. The pain was slight at first and with more exercise and longer distances and at a higher intensity on different exercises did the pain get worse. The higher intensity of exercise the longer it took to recover after exercise. At one point it was that painful. I had to hold my side to cough and sneeze, and this went on for the best part of a week.

The pain radiated up to my shoulder and the pain sometimes started in the rib area but it also started in the shoulder at times especially more lately than in the beginning. On pulling the rib outwards the pain would decrease. I did not try other options as I was informed these would not work so the surgery was my only option after a long period of many tests.

On having the operation I did not expect the pain to be as bad as what it was and the first two weeks were terrible however after this the pain had settled and subsided. I have started running again not at the pace I usually have ran at but it has only been five weeks. However, I ran 27 kilometers last Sunday and didn't suffer any pain. However, I was running at a slower speed than usual.

I have had a little shoulder pain but nothing like it was before the surgery. I cannot sleep on that side as of yet as the pressure is too much on the area. The scare is looking ok had a few problems with regards to internal stitches sticking though but hopefully this will be ok now. I am running the New York marathon in a weeks' time not like I had hoped to be running it but I will give it a go and see how it goes.”

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