
CASE REPORTS

A CASE REPORT OF SLIPPING RIB SYNDROME: AN UNCOMMON AND UNDERDIAGNOSED CAUSE OF ABDOMINAL PAIN

RAVI R. SANGHANI¹, MARIA M. ZESTOS¹,
SURESH T. THOMAS²

Abstract

Slipping rib syndrome is an uncommon and underdiagnosed cause of upper abdominal pain. Pain can be very debilitating and alter activities of daily living. It is rarely reported in pediatric population. Patients can go undiagnosed for months to years and have extensive workups without relief of pain. We report a case which shows the importance of physical examination for early diagnosis and definitive treatment in a 16 year old male.

Introduction

Slipping rib syndrome (SRS) is an uncommon cause of rib, subcostal and upper abdominal pain. It has been well described in adults however is rarely discussed in the pediatric population³. The costal cartilage of the inferior rib “slips” underneath the superior rib irritating the intercostal nerves, intercostal muscles and costal cartilage^{1,4}. SRS is usually associated with trauma to the chest wall but many cases have been reported without trauma. Though the syndrome is well described, it is underdiagnosed and often missed for extended periods of time. We report the case of a 16 year old male with severe left upper quadrant pain for 10 months who had extensive work up before our diagnosis and treatment. A simple physical examination and appropriate management can prevent patients from undergoing unnecessary costly diagnostic procedures and have a timely resolution to their pain.

Case Presentation

16 year old male presented to pediatric pain clinic for evaluation of ten months of left subcostal and upper abdominal pain. He described it as sharp, constant, and 7/10 on the verbal numeric pain scale. The pain limits his daily activities and is worsened by any type of physical activity. One week before onset of pain, he was wrestling with his father with no obvious direct trauma. He developed severely incapacitating pain and his mother was concerned he would not

1 MD, Department of Anesthesiology, Children’s Hospital of Michigan, Detroit, Michigan, United States.

2 MD, FAAP Department of Anesthesiology, Children’s Hospital of Michigan, Detroit, Michigan, United States.

Corresponding Author: Suresh T. Thomas, MD FAAP, Director of Pain Management, Children’s Hospital of Michigan, Associate Professor, Wayne State University, 3901 Beaubien St, Suite 3B-17, Detroit Michigan 48201, United States Office: 1-313-745-5535, Fax: 1-313-745-5448. E-mail: sthomas4@childrensnational.org

graduate high school.

Work up by his primary care physician included multiple radiographs, thoracic and lumbar MRIs and multiple endoscopies and colonoscopies which were all normal. Tylenol with codeine improved his pain but did not take it completely away. He was referred to a pain physician for trigger point injections to the area which did not relieve his pain. There was vague history of shingles and was started on Lyrica for possible neuropathic pain without evidence of rash or dermatomal distribution. Our examination, revealed a soft, non-distended, non tender abdomen. He was however tender to palpation in the subcostal margin on the left side. We performed the “hooking maneuver” to elicit a slipped rib and it reproduced his pain causing him significant discomfort. The remainder of his physical exam was normal. To confirm diagnosis, left intercostal nerve blocks were performed at the 10th, 11th and 12th levels with local anesthetic and steroid. Patient was pain free for 10 hours after the blocks. Diagnosis of slipping rib syndrome was made and he was subsequently referred for surgical evaluation. The surgical team performed costal rib cartilage removal and remodeling. Findings from procedure indicate the cartilage of 12th rib was impinging on the 11th rib. On follow up, he had no pain at all and was able to resume all activities.

Discussion

SRS is an uncommon cause of subcostal abdominal and rib pain. It is very rare in the pediatric population. It can cause significant pain even when performing routine activities. SRS can be diagnosed with Hook maneuver: in this test the patient lies on his unaffected side, while the therapist hooks their fingers under the lower costal margin and pulls anteriorly. A positive test reproduces the patient’s pain and causes a click. Rib restriction may be observed as a lack of symmetry of the posterior chest wall movement on deep breathing. Radiographs cannot diagnose SRS

alone, but are useful for differential diagnosis.

Diagnosis can be confirmed with relief of symptoms following intercostal nerve blocks. Unfortunately, due to limited number of cases, it is often missed and incorrectly treated. Patients can be sent for many unnecessary diagnostic tests, invasive procedures, and be burdened by the pain. Once diagnosis is confirmed, treatment can be prescribed based on severity of symptoms. Mild symptoms can be treated with physical therapy and anti-inflammatory agents⁴. Severe symptoms may need either therapeutic intercostal nerve blocks or surgical resection¹⁻⁴.

Conclusion

Slipping rib syndrome is a condition, often missed or underdiagnosed and can consequently cause months and even years of unresolved abdominal and/or thoracic pain⁵. One review stated that in the 76 cases reviewed, SRS was not considered by the referring doctor in any of the patients and many patients were subjected to extensive investigations⁶!

Clinical Presentation

The painful rib syndrome presents itself by three features⁶:

- pain in the lower chest or upper abdomen
- a tender spot on the costal margin
- reproduction of the pain by pressing the tender spot.

As shown by this case, thorough physical exam using hooking maneuver can diagnose SRS and treatment can be guided accordingly. Our patient was subject to multiple invasive procedures and unnecessary diagnostic tests and pharmacological therapies due to misdiagnosis. Using the quickly performed hooking maneuver and diagnostic intercostal nerve blocks, patients can get a proper diagnosis and avoid numerous months of pain.

References

1. FU R, ET AL: Costal cartilage excision for the treatment of pediatric slipping rib syndrome. *Journal of Pediatric Surgery*; 47:1825-1827, 2012.
2. ROBB L, ET AL: The Slipping Rib Syndrome: An Overlooked Cause of Abdominal Pain. *Practical Pain Management*; 2013.
3. SALTZMAN D, ET AL: The slipping rib syndrome in children. *Paediatric Anaesthesia*; 11:740-743, 2001.
4. UNDERMANN BE, ET AL: Slipping Rib Syndrome in a Collegiate Swimmer: A Case Report. *Journal of Athletic Training*; 40(2):120-122, 2005.
5. BRIAN E. UDERMANN: Slipping Rib Syndrome in a Collegiate Swimmer: A Case Report. *J Athl Train*; Apr-Jun; 40(2):120-122. Level 3B, 2005.
6. EM SCOTT AND BB SCOTT: Painful rib syndrome-a review of 76 cases. *Gut*; July, 34(7):1006-1008. Level 3A, 1993.

