CASE REPORT

Rib impingement in first class cricketers: case reports of two patients who underwent rib resection

N J Boyce Cam, N Muthukumar, S Boyle, J O Lawton

Br J Sports Med 2006;40:732–733. doi: 10.1136/bjsm.2006.027995

Two first class cricket bowlers presented with costovertebral pain secondary to rib impingement. In both patients, conservative management of the injury had failed to improve symptoms. Surgical resection of the affected rib was undertaken. At follow up, both patients had made a good recovery and had returned to competitive cricket.

Rib impingement is a relatively common condition encountered in the elderly, typically osteoporotic patients.¹ As vertebral height is lost, the distance between the 10th, 11th, and 12th ribs and the iliac crest reduces. The close proximity of these structures result in impingement of the intervening muscles and subsequent pain. This may be located directly over the area of impingement or referred to the chest, back, or groin. Symptoms are exacerbated by lateral flexion, which causes mechanical compression. In fast bowlers with a “side-on” action, the body is hyper-extended, laterally flexed, and rotated to generate maximum delivery speed.² It is this action that probably accounts for unilateral rib impingement in cricketers.

CASE HISTORY

Patient 1

A 34 year old male, right handed, fast bowler presented with an eight month history of pain localised to the tip of the left 11th rib. Previously the patient had suffered from recurrent intercostal muscle traction tears, which had settled with physiotherapy. In this episode, there was no initial mechanism of injury, and the symptoms differed from previous muscle tears and, of note, were precipitated by periods of excessive bowling.

Left subcostal pain was experienced during the compression phase of bowling and was reproduced on clinical examination by combined forward flexion, rotation, and lateral flexion to the affected side. Palpation of the 11th rib tip was tender.

A magnetic resonance imaging (MRI) scan of the chest and a subsequent ultrasound showed oedema at the 11th rib tip and considerable hypertrophy of the intercostal muscle between the costal cartilage of the 11th and superior rib. A diagnosis of mechanical rib impingement against the iliac crest or superior 10th rib was postulated. Despite a substantial period of enforced rest, physiotherapy, and modification of bowling technique through video analysis, there was no symptomatic improvement. It was then agreed to perform rib resection of the 11th rib.

Before anaesthesia, the localised tenderness was infiltrated with methylene blue to help confirm the portion of rib requiring resection. At operation, the patient was placed in the left lateral position and an incision made over the tip of

the 11th rib. The distal 2 cm of hypertrophied rib was excised sub-periosteally, and the wound closed.

The patient had an uneventful postoperative recovery and rested for six weeks. This was followed by light physiotherapy, which concentrated on core abdominal exercises, side stretching, and hip stability. Four months after surgery, bowling was resumed. By six months, the patient was able to bowl full pace without any recurrence of impingement symptoms.

Patient 2

A 23 year old left handed, fast bowler presented with a six month history of right 11th rib tip discomfort. Before these symptoms, the bowler had suffered with two episodes of presumed internal oblique tears, which had not settled with physiotherapy or rest. As with patient 1, tenderness was localised to the 11th rib tip and precipitated by the flexed bowling position.

An MRI scan showed oedema on the under surface of the 11th rib tip, but an ultrasound of the area was inconclusive. After lengthy consultation and explanation of the risks, it was collectively agreed to perform 11th rib tip excision. This was performed as outlined above.

After the operation, the patient rested for four weeks, after which stretching exercises, wound massage, and swimming were started. This was followed by light resistance work to the legs and increased cardiovascular exercises on a bike. At eight weeks after surgery, the patient started abdominal strengthening exercises and light weights to the upper body. Finally after four months of physiotherapy, he returned to bowling practice and after a further month was able to bowl competitively, symptom free.

DISCUSSION

Professional cricketers are prone to musculoskeletal injuries. The most common site affected is the back,³ but the mechanical factors involved in a bowling action can result in a wide spectrum of trunk and limb injuries.

Costovertebral syndrome is a rare entity in sportsmen, and consequently management of the condition remains relatively unknown. Cricketers presenting with pain during the compression phase are often diagnosed with non-specific “bowler’s side strain”. The literature struggles to clearly define the exact aetiology and anatomical pathology for these symptoms. However, radiological examination often reveals muscular tears of either the internal or external oblique. Patient recovery is usually achieved through a combination of rest, non-steroidal anti-inflammatory drugs, and physiotherapy, although the length of time taken would appear to vary considerably.⁴

In both these two patients, conservative measures, including physiotherapy, steroid injection, and altering their bowling action, failed to alleviate symptoms. Surgical resection was the only remaining treatment option. By excising the prominent rib tip, both the focus and mechanical

What is already known on this topic

- Rib impingement can occur in bowlers during the delivery phase when rotation and lateral flexion of the trunk takes place, reducing the distance between the lower ribs and the iliac crest
- The syndrome should be differentiated from other possible causes of side strain, including stress fractures of the lower ribs and tears of the abdominal musculature

What this study adds

- This is the first report of surgical resection to treat rib impingement in professional cricketers
- Evidence is offered that rib impingement in bowlers that is resistant to conservative measures can be resolved by surgical excision of the affected rib tip

cause for the pain are removed. It is, however, possible that subsequent scar tissue could cause recurrence of the symptoms. Certainly, in a series of six patients who underwent surgical resection presented by Wynne *et al*,⁵ every single one had obtained significant symptomatic relief at follow up. However, in professional cricketers who exert a much higher demand and stress on their bodies, it is unclear what the long term results and benefits are after surgery.

CONCLUSION

Careful history and clinical examination help to formulate a diagnosis of rib impingement. An MRI scan will help to exclude other causes, such as muscular tears or stress fractures of the rib. When all conservative treatment

modalities fail to achieve symptomatic relief, then surgical rib resection should be considered.

Authors' affiliations

N J Boyce Cam, N Muthukumar, S Boyle, J O Lawton, Department of Orthopaedic & Trauma Surgery, Leeds General Infirmary, Leeds NHS Teaching Hospital Trust, Great George Street, Leeds, UK

Competing interests: none declared

Correspondence to: Mr Boyce Cam, 36 Denton Avenue, Leeds LS8 1LE, UK; nickboycecam@hotmail.com

Accepted 16 May 2006

Published Online First 21 June 2006

REFERENCES

- 1 **Hirschberg GG**, Williams KA, Byrd JG. Medical management of iliocostal pain. *Geriatrics* 1992;**47**:63–7.
- 2 **Elliott B**. Back injuries and the fast bowler in cricket. *J Sports Sci* 2000;**18**:983–91.
- 3 **Stretch R**. The incidence and nature of injuries in first-league and provincial cricketers. *S Afr Med J* 1992;**83**:339–42.
- 4 **Humphries D**, Jamison M. Clinical and magnetic resonance imaging features of cricket bowler's side strain. *Br J Sports Med* 2004;**38**:e21.
- 5 **Wynne AT**, Nelson MA, Nordin BEC. Costo-iliac impingement syndrome. *J Bone Joint Surg [Br]* 1985;**67**:124–5.

COMMENTARY

Rib impingement is becoming a more common injury in elite and potentially elite fast bowlers because of the increased bowling workload demands placed on them. This paper provides those involved with the treatment and rehabilitation of cricket injuries with some evidence to support surgical resection in the case of rib impingement injuries that do not respond to conservative treatment.

R Stretch

Nelson Mandela Metropolitan University, South Africa;
richard.stretch@nmmu.ac.za