

COSTO-ILIAC IMPINGEMENT SYNDROME

A. T. WYNNE, M. A. NELSON, B. E. C. NORDIN

From The General Infirmary at Leeds

A syndrome of back and loin pain produced by impingement of the lowest rib against the iliac crest is described in six patients. All had noticed a significant loss of height and five had osteoporosis of the vertebral column. It is suggested that mechanical irritation of the lowest rib against the iliac crest was the cause of the pain and that subperiosteal resection of the outer two-thirds of the rib would stop this irritation and relieve the symptoms. The six patients who underwent resection of the twelfth rib all obtained relief of symptoms; in one patient the eleventh rib also was resected. At latest review 5 to 34 months postoperatively there has been no recurrence of symptoms.

In a small group of patients attending an osteoporosis clinic, pain in the back and loin of variable frequency was encountered. All had noted a significant loss of height of the trunk. It was suggested that impingement of the lowest rib against the iliac crest was the cause of the pain and that resection of the rib would relieve the symptoms. This procedure has now been performed on six patients and the results are reviewed.

CLINICAL PRESENTATION

The presenting symptom was back pain in the region of the twelfth thoracic vertebra radiating to the loin, or loin pain alone. The pain was described as a constant or intermittent ache; occasionally a grating sensation also was felt. Aggravating factors were sitting, especially in low chairs, twisting the trunk, and walking. All patients had noticed loss in height over the years.

On examination the pain was reproduced by palpation under the lowest rib and by lateral flexion to the affected side, when the rib could be felt impinging on the iliac crest. Radiological examination was not helpful in diagnosis, but confirmed the presence of relatively long twelfth ribs in all the patients. Five of the six patients had osteoporosis of the vertebral column.

The six patients comprised two men and four women with an age range of 35 to 65 years; all had had symptoms for at least one year.

TREATMENT

Conservative treatment, including physiotherapy in the form of exercises, short-wave diathermy, lumbar supports and rest, had been tried without lasting benefit.

A. T. Wynne, FRCS Ed, Orthopaedic Registrar
M. A. Nelson, FRCS, Consultant Orthopaedic Surgeon
The General Infirmary at Leeds, Great George Street, Leeds LS1 3EX, England.

Professor B. E. C. Nordin, MD, FRCP
Endocrine Unit, Royal Adelaide Hospital, Adelaide, South Australia.
Requests for reprints should be sent to Mr A. T. Wynne.

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Injection of local anaesthetic and steroids gave only a short period of relief.

Surgical treatment. Excision of the outer two-thirds of the twelfth rib is performed under general anaesthesia with the patient in a lateral position, painful side uppermost. The table is broken under the lower ribs in order to open up the flank and bring the lowermost ribs into prominence; the position is the same as that used for the lateral approach to the kidney. In this position the twelfth rib can be easily palpated. Via a skin-crease incision over its distal two-thirds, the rib is exposed and excised subperiosteally.

Postoperative management. The patients were mobilised when comfortable, that is within 24 to 72 hours, and discharged at 7 to 12 days. There were no complications and the subsequent scars were all cosmetically acceptable.

CASE REPORTS

Case 1. A woman aged 52 presented with an 18-month history of constant pain in the left loin aggravated by walking, sitting and twisting movements. She had osteoporosis of the vertebral column with 4 cm loss of height. Five months after resection of the twelfth left rib she remains very pleased with her relief of pain.

Case 2. A woman aged 65 complained of a constant nagging pain in the left loin for three years. This was aggravated by walking and twisting movements. She had osteoporosis of the vertebral column and had noticed a height loss of 7 to 8 cm. Twenty-two months after resection of the twelfth rib she remains free from symptoms.

Case 3. A woman aged 65 presented with a 2½-year history of intermittent back pain radiating to the left loin; aggravating factors were walking and twisting movements. This patient had osteoporosis of the vertebral column with a height loss of 6 cm over the last 15 years. The twelfth left rib was resected in February 1981 and at review 24 months later she was free of symptoms.

Case 4. A man aged 35 presented with a one-year history of intermittent low back pain and bilateral loin pain, aggravated by sitting and twisting movements. He had osteoporosis of the vertebral column and reported an 8 cm loss of height in recent years. Clinically it was felt that the eleventh and twelfth ribs were impinging on the iliac crest, and in March 1980 the distal two-thirds of both ribs were resected, the left side two weeks after the right. There was immediate relief of pain. At review 34 months later he considered the pain insignificant as compared to that before the operation and that the procedure was worth while.

Case 5. A woman aged 48 presented with a four-year history of bilateral loin pain, the left side worse than the right; the pains were aggravated by walking, sitting and twisting movements. She had no clinical or radiological evidence of osteoporosis of the vertebral column, but had noticed a 2.5 cm loss in height over the last 10 years. Twelfth left rib section was performed in July 1982 with relief of symptoms. She requested a similar procedure on the right side which was performed five months later, when a length of 8 cm was resected. At review in June 1983 she was free of symptoms.

Case 6. A man aged 58 presented with a three-year history of intermittent back and loin pain, the right side worse than the left; the pains were aggravated by sitting and twisting movements. This patient had known osteoporosis of the vertebral column with a height loss of 9 to 10 cm. Initially the twelfth right rib was resected with continuing relief of symptoms 15 months later. He is now awaiting a similar procedure on the twelfth left rib.

RESULTS

All six patients obtained relief of symptoms after rib resection. Two patients with bilateral loin pain, who initially had resection of the twelfth rib on the more painful side, subsequently requested a similar procedure on the other side.

At the latest review there has been no recurrence of symptoms, after a follow-up ranging from 5 to 34 months. It had been thought that symptoms might recur if the eleventh rib started impinging on the iliac crest as a result of resection of the twelfth rib.

DISCUSSION

Of the many patients who present at the outpatient department with back pain, a small number can be identified where the pain is due to the twelfth rib impinging on the iliac crest. The pain is characteristic, there is always loss of height of the trunk and usually osteoporosis of the vertebral column. The pain can be reproduced by palpation under the twelfth rib of the affected side. Radiologically these patients all have relatively long twelfth ribs. Resection of the distal two-thirds of the rib gave lasting relief of symptoms.

The lack of recurrence suggests that the eleventh rib does not then start impinging on the iliac crest to cause further pain.

No reference to this condition has been found in the literature. The "slipping rib" (Davies-Colley 1922), the "slipping rib cartilage" (Holmes 1941), and the "rib tip syndrome" (McBeath and Keene 1975) are different conditions referring to pain at the costal margin attributed to increased mobility of the tips of the eighth, ninth and tenth ribs at their intercostal joints. The suggested treatment for this pain is injection of local anaesthetic and steroids, or resection of the eighth, ninth and tenth rib margins.

Machin and Shennan (1983) recently reported four cases of loin pain due to intercostal neuralgia associated with the eleventh or twelfth ribs or both, and cured by resection of the relevant ribs. There is no mention of the associated features we describe except that manipulation of the rib reproduced the pain. This suggests that the intercostal neuralgia they describe is not due to costo-iliac impingement.

Conclusion. The costo-iliac impingement syndrome is a recognisable condition in a small number of patients complaining of back and loin pain. Resection of the distal two-thirds of the rib is a simple procedure and provides lasting symptomatic relief.

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REFERENCES

- Davies-Colley R. Slipping rib. *Br Med J* 1922; **1**:432.
 Holmes JF. Slipping rib cartilage: with report of cases. *Am J Surg* 1941; **54**:326-8.
 McBeath AA, Keene JS. The rib-tip syndrome. *J Bone Joint Surg [Am]* 1975; **57-A**:795-7.
 Machin DG, Shennan JM. Twelfth rib syndrome: a differential diagnosis of loin pain. *Br Med J* 1983; **287**:586.