

## REVIEW ARTICLE

## Painful rib syndrome – a review of 76 cases

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**Abstract**

The painful rib syndrome consists of three features: pain in the lower chest or upper abdomen, a tender spot on the costal margin, and reproduction of the pain on pressing the tender spot. This is a common cause for referral to a general medical/gastroenterology clinic, accounting for 3% of new referrals in Lincoln. Seventy six consecutive patients were studied. The mean age was 48 years and 70% were women. Forty three per cent had been investigated, often extensively, before referral, and eight had had a non-curative cholecystectomy. The case notes from all patients were reviewed and a follow up questionnaire was sent after a mean period of four years to those 72 still alive, of which 56 replied. Thirty nine (70%) still had the pain although all except three had learnt to live with it. Despite a firm diagnosis being given, 25 (33%) patients were referred again to hospital by their general practitioner. All further investigations were negative apart from the finding of gall stones in three patients. The four patients who died had died from unrelated causes. The painful rib syndrome is common but underdiagnosed. It is a safe, clinical diagnosis requiring no investigation. Systematic firm palpation of the costal margin is recommended in all patients presenting with pain in the lower chest or upper abdomen.

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Pain arising from the costal margin has been recognised in medical journals for many years. This has sometimes been attributed to abnormal mobility of the lower intercostal joints and the term 'slipping rib' was coined by Davies-Colley.<sup>1</sup> 'Clicking rib',<sup>2</sup> 'twelfth rib',<sup>3</sup> 'rib-tip syndrome',<sup>4</sup> 'syndrome of the hypersensitive xiphoid'<sup>5</sup> are other names which have been applied. The various names have tried to indicate both the nature of the problem and the various sites where the condition occurs. This may have led to some confusion and may explain why the condition, though acknowledged to be common, is not widely recognised. The most useful report was that of 46 patients by Wright in 1980.<sup>6</sup> This, as well as characterising the symptomatology, showed that the condition accounted for nearly 5% of referrals to a gastroenterology clinic. Despite this report, the condition is still rarely diagnosed and is not mentioned in standard medical textbooks or taught in our local medical schools. It was therefore thought important to

publicise again the condition and at the same time characterise it and discover its natural history using a larger number of cases. Because the cause is not understood, the non-committal name 'painful rib syndrome' was chosen to include the previously mentioned terms. It also has the advantage of including the main symptom – that is, pain, and being readily understood by patients. It was precisely defined as comprising all of the three features: pain in the lower chest or upper abdomen, a tender spot (or spots) on the lower costal margin (including the xiphoid), and reproduction of the pain by pressing on that spot. This syndrome does not include pain and tenderness of the upper costal cartilages such as costochondritis, which is also common.

**Methods**

Seventy six consecutive patients attending the general medical clinic of a physician with a special interest in gastroenterology, in whom the principal diagnosis of painful rib syndrome was made, were selected for study. These accounted for 3% of all new patients. The case notes of each patient were examined and a simple questionnaire sent to all 72 patients who were still alive. The patients were asked whether they still had the pain and if so whether they had learnt to live with it. Those who had lost the pain were asked how long it had lasted. Finally they were asked to select the description that best fitted their pain from 'minor nuisance', 'moderately severe', and 'interferes with activities'. Fifty six patients replied giving a response rate of 77%. The mean follow up period was four years (range 1-7 years).

**Results****CLINICAL FEATURES**

The mean age at presentation was 48 with a range of 12-79 years. Fifty three (70%) were women and the mean age was the same for men and women. The pain was right sided in 34 (45%), left sided in 33 (43%), on both sides in 4 (5%), and at the xiphoid in 5 (7%). The mean duration of pain at presentation was 32 months (range 1 month to 28 years). Twenty six (46%) of the 56 respondents described their pain as a minor nuisance, 23 (41%) as moderately severe, and six (11%) as interfering with their activities. One respondent was uncertain. Thirty three (43%) of the total had been investigated, often extensively. Investigations included barium meal,

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barium enema, endoscopy, ultrasound scanning, intravenous urography, spinal radiology, and laparotomy before referral, and eight had had a non-curative cholecystectomy. The pain was usually intermittent although some thought it was continuous. Many patients said that they had had to avoid lying on one side (not always the side of pain) from the onset of their symptoms. Some said the pain was provoked or made worse by lifting, twisting or bending. Some were worse after sitting for a while (for example when driving) and the pain was then sometimes relieved by stretching. It was not unusual for patients to relate the pain to meals, or some particular food. No patient said that they had noticed a click from their ribs but this question was not routinely asked. A history of chest trauma was not a feature. Twenty three patients also had symptoms of gastro-oesophageal reflux and nine had an irritable bowel. Twenty one (28%) gave a history of anxiety or depression.

#### OUTCOME

Three patients had died from unrelated causes. One died seven years later of disseminated malignancy; one after three years from alcoholism, another after one year from colonic carcinoma. One other patient had died but, regrettably, it was not possible to trace the record of her cause of death. Thirty nine (70%) of the respondents still had the pain. They had had the pain for a mean of 40 months (range 2 months–28 years) at presentation and a mean total duration at follow up of eight years (range 2.5–35 years). All, apart from three patients, said they had learnt to live with the pain. Seventeen (30%) had lost the pain after a mean of 16 months (range 2–36 months). Their mean duration of pain at presentation was 11 months (range 1–24 months). Eleven of these 17 had lost their pain within three months of the consultation when the nature of the problem was explained. Despite a firm diagnosis and explanation being given to both the patient and referring general practitioner, 25 (33%) of all patients were referred again to hospital for the same problem. Further investigation in other clinics were negative except for ultrasound scanning, which revealed gall stones in three and they had a cholecystectomy. One patient lost the pain after the operation but the other two did not. The following case reports show the tendency to doubt the diagnosis and over-investigate such patients.

#### CASE REPORT 1

A 79 year old woman was referred with left upper quadrant and epigastric pain, which she had had intermittently for 28 years. It was worse on sitting forward and lying down. At the onset she had been referred to a surgeon and had a normal barium enema and chest x ray. She was then seen by a gynaecologist and had a normal intravenous urogram. The following year the surgeon arranged an x ray of her lumbar spine and a barium meal, which were normal. A year later she had a normal dorsal spine x ray. Three years later the surgeon arranged another negative intravenous urogram. Later that year she had a

negative laparotomy and it was concluded that her pain was psychological. She continued to have pain and had a cholecystectomy 14 years after the onset of symptoms.

On examination the only abnormality was marked tenderness of the left costal margin in the mid clavicular line and pressure there reproduced her pain exactly. The diagnosis was explained and she was reassured that there was no serious disease. She continued to have the pain and was referred back four years later to a different surgeon who did a normal barium meal and barium enema. The pain persisted on follow up two years later.

#### CASE REPORT 2

A 45 year old woman with a strong family history of ischaemic heart disease was referred with left sided chest pain, which she had had for six years. It had been worse for ten days. It went into the back and arms and was worse on lifting, coughing, yawning, and on lying on her right side. She had had a cholecystectomy for epigastric pain seven years before. She had been referred to a physician the year after surgery with chest and epigastric pain. A barium meal showed no definite abnormality. She continued to have the pain and a repeat barium meal four years later was normal. The next year she was referred to a cardiologist. Angina was excluded by a negative treadmill exercise tolerance test. Despite this, her general practitioner gave anti-anginal medication without benefit. She was referred again to the same cardiologist the next year and the exercise test was again negative and she was reassured.

On examination there was a tender spot on the left costal margin in the mid-clavicular line and pressure there reproduced her pain exactly.

Despite reassurance and explanation she was referred to a surgeon the next year who arranged a negative barium meal. She was referred back to the medical clinic after a few months with the same clinical findings. She was given further reassurance. The next year she was admitted to the coronary care unit and myocardial infarction was excluded. The rib tenderness was still present. The next year she was referred to both a chest physician and a cardiologist but no further investigations were done.

#### Treatment

Emphasis was made on explaining the benign nature of this common problem. For persistent troublesome pain paracetamol was recommended. None were referred for rib resection, an option often described in surgical publications.<sup>4,7,8</sup> The possibility of injection with local anaesthetic was mentioned to the referring general practitioner in some cases to be considered if the pain remained a problem. Five were referred to the pain clinic but without relief of symptoms.

#### Discussion

The cause of the painful rib syndrome is not known and this study has not thrown any light on

the pathogenesis. Where there is a definite clicking, which was not found in our patients, the pain is presumably because of the movement of one rib upon another. There are synovial joints between the fifth to eighth costal cartilages and it is possible that in some of the patients in this series the pain was a result of inflammation in one of these joints. Unfortunately there are no controlled histological studies of resected specimens to confirm this.

The high occurrence of this condition in medical clinics has been confirmed. Wright<sup>6</sup> found the condition in 1% of new patients in general medical clinics and in 5% of new patients attending gastroenterology clinics. We found 3% of new patients attending a mixed general medical/gastroenterology clinic had the condition. In none of the patients had the diagnosis been considered by the referring doctor and many patients had been subjected to extensive investigations. The diagnosis was easy to make and seems to be a safe one. In none of the patients had the syndrome been a masquerade for a more serious disease. No investigation is needed for the pain in this condition but of course other symptoms may coexist and they will need managing on their own merits. With firm reassurance and explanation the pain either

disappears (usually within three months) or the patient learns to live with it as a minor nuisance. If the pain does not settle within three months it will become chronic in the vast majority (87%). A few patients remain very troubled and perhaps these should be referred to a pain clinic for injection of local anaesthetic (as there are published reports of its benefit)<sup>4,6</sup> or, rarely, to a surgeon for excision of the offending rib.

It is very important that the condition be recognised so as to avoid the expense and trouble of investigations and multiple consultant referrals. The condition should figure prominently in undergraduate clinical training and in medical textbooks. All doctors should be advised to systematically palpate the costal margin firmly in all patients complaining of pain in the lower chest or upper abdomen.

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5 Lipkin M, Fulton LA, Wolfson EA. The syndrome of the hypersensitive xiphoid. *N Engl J Med* 1955; 253: 591-7.

6 Wright JT. Slipping rib syndrome. *Lancet* 1980; ii: 632-4.

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8 Copeland GP, Machin DG, Shennan JM. Surgical treatment of the slipping rib syndrome. *Br J Surg* 1984; 71: 522-3.