THE EPIDEMIOLOGY OF SPONDYLODISCITIS IN ANKYLOSING SPONDYLITIS—A CONTROLLED STUDY

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SUMMARY
Spondylodiscitis is well recognized in ankylosing spondylitis (AS), but little is known about its epidemiology. We therefore reviewed 147 consecutive patients with AS using lumbar and thoracic spine radiographs. For each patient with spondylodiscitis, two age- and sex-matched controls were selected. Twelve individuals (8%) had spondylodiscitis, affecting a total of 32 disc spaces: 10 thoracic, 22 lumbar. The mean age at onset was 21 ± 4.1 yr, significantly younger than that of the controls (28.5 ± 10.1 yr, P = 0.004). Half of the 12 patients had multiple lesions (between two and six levels). The most common site was the lower thoracic spine with additional lumbar spine involvement. Only two of the 12 patients (17%) had symptoms localized to the lesions. Neither trauma nor infection were considered to be causes of the spondylodiscitis. In conclusion: (1) spondylodiscitis occurs in ~8% of patients with AS; (2) these patients have early onset of disease; (3) multiple-level lesions in the spine are not uncommon among those with spondylodiscitis; (4) lesions are usually asymptomatic.

KEY WORDS: Ankylosing spondylitis, Spondylodiscitis, Radiographs.

DESTRUCTIVE lesions of spondylodiscitis in ankylosing spondylitis (AS) involving an intervertebral disc space and adjoining vertebral bodies were first reported in 1937 [1]. The earliest significant clinical observations were made by Endstrom [2], while the cumulative experience was reviewed in 1972 [3]. Radiological estimates of the prevalence of spondylodiscitis are reported in a range of 1–28% [3, 4], while a figure of 5–6% has been claimed in patients with a > 10 yr duration of AS (5–7). However, according to Little et al. [8], spondylodiscitis can develop at any time during the course of AS and may be asymptomatic. Inevitably, there is some confusion regarding the specific use of the term ‘spondylodiscitis’; some mean an inflammatory pathology at the discovertebral junction, while others refer to the perhaps trauma-related radiological change seen in association with a fused spine. Herein, we use the term to describe destructive change at the discovertebral junction that may be predominately peripheral, central or both. We excluded localized lesions that may relate to cartilaginous node formation. In essence, we consider that there is general agreement between our understanding of the phenomenon and the classical descriptions of Cawley et al. [3] and of Resnick and Niwayama [9]. We reviewed the nature of spondylodiscitis (i.e. erosive/destructive discovertebral disease) in 147 consecutive patients with AS.

MATERIALS AND METHODS
One hundred and forty-seven consecutive patients with AS were evaluated using thoracic and lumbar radiographs. Those with spondylodiscitis were identified. The lesions were scored on a 0–10 scale, 0 being the worst. This was an empirical scale with zero referring to normality. One is suspicious change and 2–4 show minimal changes with scleritis; minor degrees of end-plate erosions and architectural alterations of the vertebral body, while 5–7 refer to moderate changes of a greater degree with further erosion and destruction. Eight and nine relate to severe destructive disease, and 10 represents end-stage disease, i.e. destruction of the entire disc and most of the adjoining two vertebrae. Intra- and inter-observer reliability of scoring was ensured in this study through the reading of X-rays by two observers, with the consensus score being accepted. Two age-matched controls without spondylodiscitis were selected for each subject with radiological evidence of spondylodiscitis. All patients and controls were evaluated for pain, peripheral joint involvement, uveitis, inflammatory bowel diseases, psoriasis or Reiter’s syndrome, plus employment status and history of trauma or infection.

RESULTS

Of the 147 patients with AS, 12 (8%; 10 males, two females) had spondylodiscitis, affecting a total of 32 disc spaces: 10 thoracic, 22 lumbar. The ages of the 12 spondylodiscitis cases at the time of radiographic evaluation ranged from 31 to 72 yr (mean age 49.1 ± 12.7 yr), while the mean age at onset of AS was 21 ± 4.1 yr (range 12–28 yr). This was younger than the mean age at disease onset of the controls (mean age 28.5 ± 10.8 yr; range 18–50 yr; P = 0.004). The mean duration of AS among the spondylodiscitis cohort was 28.6 yr (± 11.2) compared to 19.0 yr (± 11.4 yr) among the control group (NS). There were no other major differences between the two cohorts.

Of the 12 patients with spondylodiscitis, only two (17%) had symptoms localized to the lesion (T9–10 and T10–11). There was no history of major trauma or infection in any of the patients. In addition, none of the patients were employed in manual work.

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The mean score for the thoracic lesions was 6.1 (range 3-10), while for the lumbar lesions it was 4.7 (range 1-10). Six of the 12 patients with spondylodiscitis had an involvement at only one level; two of whom had thoracic lesions at T9-10 (score 10 and 7, respectively) and one at T10-11 (score 3), while three patients had lesions in the lumbar vertebrae at L1-2 (score 7), L2-3 (score 3) and L5-S1 (score 10), respectively (Table I and Figs 1 and 2). The mean score of the lesions in both thoracic and lumbar vertebrae was 6.6. The other six patients had multiple lesions: two at three, one at four, two at five, and one at six levels. The mean score of the lesions in multiple levels for each of the six patients ranged from 2.2 to 8.3 (mean 5.1) compared to the score of single-level lesions (ranged from 3 to 10, mean 6.6). In addition, the lower thoracic spine was the most common site with additional lumbar spine involvement in each individual.

In a comparison of the levels of lesions with the duration of AS in patients with spondylodiscitis, a negative correlation was found between them: the relative disease duration of the six patients was 34.8 yr with one lesion level, 29 yr with two levels, 24 yr with four levels, 17.5 yr with five levels and 10 yr with six levels.
DISCUSSION
Spondylodiscitis is characterized radiographically by erosion and sclerosis of the vertebral end plate adjacent to the disc, and sometimes by disc space narrowing [3, 9, 10]. The point prevalence of the phenomenon in AS has been reviewed. An obvious limitation of this type of study is that it is unable to provide a picture of the prognosis or progression of the condition. Nevertheless, a study of this nature can provide the clinician or radiologist with a sense of the frequency, distribution and symptomatic status of these lesions.

Out of 147 consecutive patients with AS, 12 had spondylodiscitis at a total of 32 levels. The prevalence of spondylodiscitis in AS has been reported in a range of 1–28% (NB this last almost certainly includes romans lesions) [3]. Rosin et al. [5] and Schulitz [6] reported a prevalence of 5 and 6%, respectively, in patients with a duration of AS of > 10 yr. These figures are in agreement with ours (8%).

The duration of AS at the time of diagnosis of spondylodiscitis ranges from 2 to 30 yr (mean 20 yr) [3, 8, 10–16]. This tendency for spondylodiscitis to occur in patients with a long duration of AS correlates with our data (mean duration 28.6 yr).

Single lesions were seen in six of our patients. The remaining 24 lesions were seen in another six patients at multiple levels, especially in lumbar and lower thoracic vertebrae, as described elsewhere [9, 17, 18].

Almost all of our patients had syndesmophytes near the lesions and fused apophyseal joints. By contrast, Rivelis and Freiberger [11] describe five patients, all of whom presented with pain and movement at the level of their lesions. In contrast to the patients of Schmorl and Junghanns [19] and Cawley et al. [3], we found no evidence of fractures of the neural arch using conventional radiological examination. However, additional radiological views or routine radionuclide imaging may have revealed evidence of old fractures. It is possible that lesions which are symptomatic are associated with pain because of movement. In such a situation, there may be more obvious evidence of a fracture site.

All of our patients had severe AS with evidence of cervical spine involvement. Only two of our patients with spondylodiscitis had severe back pain, which in one was aggravated by movement. Neither patient with pain had a history of trauma. In the remaining patients, spondylodiscitis was asymptomatic. Little et al. [8] have, likewise, published a review of six patients with AS who had asymptomatic spondylodiscitis, two of whom had multiple-level lesions.

Although a history of infection is absent among our 12 patients, it should be noted that this was not confirmed by biopsy. However, the long history and lack of symptoms would argue against infection. In addition, the asymptomatic nature of the lesions means that routine clinical biopsy would be inappropriate.

In contrast to findings by Cawley et al. [3], who reported that 67% of patients with AS and spondylodiscitis were employed in heavy manual work, this was not found to be the case for any of our patients.

In conclusion, spondylodiscitis in AS is not uncommon, and is often asymptomatic. Lesions may thus be overlooked. Spondylodiscitis is more often found in patients with a long duration of AS. The lesions are usually asymptomatic, but if they are painful, the lumbar or lower thoracic spine is more frequently involved. Spondylodiscitis is predominantly a late complication of AS.

REFERENCES

