The cervical spine in patients with psoriatic arthritis

K Laiho, M Kauppi

**Objective:** To establish the incidence of clinically important inflammatory cervical spine abnormalities in radiographs of patients with psoriatic arthritis (PsA).

**Methods:** Patients were selected from a rheumatological outpatient clinic and one ward of the Rheumatism Foundation Hospital, Heinola, Finland, by examining 160 consecutive PsA cases. A total of 65 patients (38 women, 27 men) with PsA were identified in radiographs who had cervical spine radiographs available. These were evaluated for inflammatory changes, and patient records studied for disease characteristics, laboratory and clinical findings.

**Results:** In 12 cases (18%) inflammatory cervical spine changes were seen in the cervical spine radiographs. The most frequently detected was apophyseal joint ankylosis, seen in seven patients (11%). Anterior atlantoaxial subluxation (aAAS) was seen in five (8%) and atlantoaxial impaction in three (5%). In 20 of the 40 patients who had the rotational range of neck motion measured, the measurement was ≤45° either to the left or the right side.

**Conclusion:** Inflammatory cervical spine changes were not commonly seen in radiographs of patients with PsA. Apophyseal joint ankylosis and aAAS were detected most often. PsA may decrease the rotational range of neck motion significantly.

**RESULTS**

The most common disease type in both patient groups (with and without cervical spine radiographs) was polyarthritis (65% vs 60%). The least common was oligoarthritis (17%) in patients with cervical spine radiographs, but in those without radiographs, the disease was the axial type (12%).

Twelve of the 65 patients (18%) had inflammatory changes in the cervical spine. Table 1 shows the incidence of inflammatory changes. Apophyseal joint ankylosis was seen solely between C2 and C3 in four patients (fig 1), between C2 and C4 in two patients, and between C3 and C4 in one (fig 2). No patients with severe AAI were seen (all three had grade II AAI). The size of aAAS was 9 mm in one patient and 4–7 mm in four. AAS was unstable in three patients and stable in two (both of them had AAI). SAS was seen in one patient at level C3–4 and in another at C5–6 (fig 1).

In 20 of the 40 patients, who had the rotational range of neck motion measured, the measurement was ≤45° either to the left or the right side. One patient had undergone posterior spondylodesis at C1–2 because of aAAS (5 mm) and neck and occipital pain. Postoperatively no aAAS remained. No patient had neurological complications.

**Abbreviations:** a (p)AAS, anterior (posterior) atlantoaxial subluxation; AAI, atlantoaxial impaction; CEP, C reactive protein; ESR, erythrocyte sedimentation rate; PsA, psoriatic arthritis; SAS, subaxial subluxation.
The mean age of patients for whom cervical spine radiographs were available was at onset of PsA 38 years (range 18–65) and at radiography 49 (range 25–76) years. Their mean duration of PsA from initial arthritic symptoms to the time of cervical spine radiography was 11 years (range 1–27) and the female to male (F:M) ratio was 1.4:1. Fifty eight of the 65 patients had a Westergren erythrocyte sedimentation rate (ESR) available, with a median 24 mm/1st h (range 2–81).

Serum C reactive protein (CRP) concentration was taken from 57 of the 65 patients, the median being 10 mg/l (range 0–163).

In the 95 patients with PsA (F:M ratio 1:1.1) without cervical spine radiographs available at study entry the mean duration of PsA was nine (range 0–32) years and the mean age 40 (range 16–76) years. In 79 of these 95 the median ESR was 13 mm/1st h (range 2–54) and in 77 the median CRP was 6 mg/l (range 0–46). Sixty per cent of them had polyarthritis, 28% oligoarthritis, and 12% axial disease.

**DISCUSSION**

Inflammatory cervical spine changes were studied in 65/160 (41%) patients with PsA who had been treated in a rheumatological outpatient clinic and one ward. Radiographs had been taken because of neck symptoms, limitation of neck movements, or as a preoperative routine. Although cervical spine radiographs were available in only less than half of the patients treated during the study period, we consider that this study adds useful information on patients with PsA seen by a rheumatologist, because the patients with clinical indications for cervical spine radiography are more likely to show important changes.

Most commonly these patients had polyarticular disease. Oligoarticular disease was seen less often in patients who had had cervical spine radiographs taken than in those without radiographs (17% v 28%). Patients who had cervical spine radiographs available tended to have higher ESR and CRP values than those whose cervical spine was not radiographed. This may reflect increased inflammatory activity among patients with cervical spine symptoms and need for radiography. They were also more often taking glucocorticosteroids. Blau and Kaufman have shown that patients with PsA with cervical spine changes had higher ESR levels than the patients without the changes. 3 In their study, patients with PsA had higher ESR levels than in our study.

The most common cervical spine change was apophysial joint ankylosis, seen in 11% of the patients. This is clearly less than seen in other studies, which have reported the incidence of apophysial joint changes in 15/73 patients (20%), 7/30 (23%), 20%, and 28%. 2, 7–9 aAAS was seen less commonly here (8%) than in other studies (23% and 45%) or almost equally

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Oligoarthritis (n=11)</th>
<th>Axial disease (n=12)</th>
<th>Polyarthritis (n=42)</th>
<th>All No (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anterior atlantoaxial subluxation (&gt;3 mm, aAAS)</td>
<td>1</td>
<td>4</td>
<td>5 (8)</td>
<td></td>
</tr>
<tr>
<td>Posterior atlantoaxial subluxation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atlantoaxial impaction (AAI)*</td>
<td>2</td>
<td>1</td>
<td>3 (5)</td>
<td></td>
</tr>
<tr>
<td>Apophysial joint ankylosis</td>
<td>1</td>
<td>3</td>
<td>3 (7)</td>
<td>7 (11)</td>
</tr>
<tr>
<td>Subaxial subluxation (&gt;3 mm)</td>
<td>1</td>
<td>1</td>
<td>1 (2)</td>
<td>2 (3)</td>
</tr>
<tr>
<td>aAAS+AAI</td>
<td>1</td>
<td>1</td>
<td>2 (3)</td>
<td></td>
</tr>
</tbody>
</table>

*Sakaguchi-Kauppi method, grades II–IV.*

### Figure 1
Lateral view radiograph of cervical spine in flexion in a 50 year old man who has had PsA for 22 years. Anterior AAS of 7 mm and 4 mm subaxial subluxation at C5–6 level are seen. Apophysial joint fusion can be seen at C2–3.

### Figure 2
Lateral view radiograph of the cervical spine in flexion showing apophysial joint ankylosis at C3–4 in a 60 year old woman who has had PsA for 27 years. Spondyloarthritis is seen at the lower level of the cervical spine.
often (3/30, 3.75, 5%). AAI was mild and detected in 5% of patients, which is fewer than reported in a study of 28 patients (25%), but slightly more than in a study of 57 patients (2%). SAS was noted in only 3% of patients. Others report SAS in 1–42% of patients with PsA. Some of the patients had significantly limited rotational range of neck motion, but no neurological complications were seen.

Inflammatory cervical spine abnormalities were not common in the patients we studied. The size of aAAS was usually moderate and no pAAS was detected. Apophysial joint ankylosis may be more common in patients with PsA with axial disease, but to assess this with certainty would require study of a larger number of patients. The present findings confirm earlier observations that apophysial joint ankylosis is more common in patients with ankylosing spondylitis than in PsA. Comparison of these results with those from patients with rheumatoid arthritis suggests that inflammatory cervical spine changes in PsA may be milder and less common than in rheumatoid arthritis, with the possible exception of apophysial joint ankylosis.

In conclusion, inflammatory cervical spine changes were not commonly seen in patients with PsA. The most common changes were apophysial joint ankylosis and aAAS. None the less clinically significant cervical spine changes do develop also in PsA.

Authors’ affiliations
K Laiho, M Kauppi, Rheumatism Foundation Hospital, Heinola, Finland

Correspondence to: Dr K Laiho, Rheumatism Foundation Hospital, FIN-18120 Heinola, Finland; kari@laiho.as

Accepted 28 January 2002

REFERENCES