

Tuberculosis of the sternoclavicular joints

Mandeep S Dhillon¹, Ravi Kumar Gupta², Raj Bahadur² and Onkar N Nagi¹

Department of Orthopaedic Surgery, ¹Postgraduate Institute of Medical Education and Research, and ²Govt. Medical College and Hospital, Chandigarh, India. Correspondence: Dr. M S Dhillon, 1090/2, Sector 39-B, Chandigarh 160036, India
E-mail: msdhillon@glide.net.in/mandyrima@yahoo.com
Submitted 00-01-28. Accepted 01-02-03

ABSTRACT – From May 1991 to December 1997, we treated 9 patients with tubercular arthritis in 10 sternoclavicular joints. The patients presented with a painful swelling (7 joints), painless swelling (2 joints) and a painless (?) discharging sinus (1 joint) having a mean duration of symptoms of 13 (6–32) months. The diagnosis was made with fine-needle aspiration or open biopsy. In 1 patient debridement of the joint was combined with open biopsy. All patients were initially put on a 4-drug regimen of antitubercular therapy (ATT). 2 joints not responding to closed treatment were surgically debrided after 2–3 months of ATT. Total duration of ATT was 14–18 months. At final follow-up after average 4.5 (1.5–7.5) years, all lesions had healed. 3 patients had mild limitation of shoulder motion, with no pain, and 2 patients had a cosmetically ugly scar at the site of the sinus or biopsy

Osteoarticular tuberculosis is increasing and is often misdiagnosed in the initial stages (Watts and Lifeso 1996) due to lack of awareness, or presentation at uncommon sites. The sternoclavicular joint, a rare site for primary presentation, has not been stressed in the literature (Tuli 1993, Yasuda et al. 1995, Yood and Goldberg 1980). Here we describe our experience of treating tubercular arthritis in 10 such joints.

Patients and treatment

Between 1991 and 1997, we treated 9 patients with tubercular arthritis in 10 sternoclavicular joints (Table). Their mean age (7 men) was 33 (18–50)

years. The right side was involved in 5, the left side in 3, and 1 patient had bilateral involvement (reported previously, Dhillon et al. 2000). The commonest presentation was pain and swelling in 7 joints (Figure 1), followed by painless swelling in 2, and a discharging sinus in 1 joint (Figure 2). Mild to moderate restriction of motion of the shoulder because of pain was found in 5 patients. Constitutional symptoms in the form of malaise, fever, loss of weight and of appetite were seen in 4 patients. The mean duration of symptoms before diagnosis was 13 (6–32) months. 2 patients were initially treated by chest physicians for chest pain, and were referred to us after the onset of swelling at 1 month and 2.5 months, respectively. 3 patients had been given an injection of steroids into the subdeltoid bursa on suspicion of a problem in the shoulder joint prior to diagnosis.

All patients had a raised erythrocyte sedimentation rate (ESR) and a positive Mantoux. Evidence of granulomatous pathology was obtained in every case by FNAC or biopsy, while acid fast bacilli was seen in only 2 cases. No patient had an active tubercular lesion in the lungs or a positive HIV. Plain radiographs were unremarkable in all cases, except in one showing a doubtful cystic lesion in the medial end of the clavicle. CT scans (Figure 3) were done in 7 patients (8 joints). Modern imaging techniques were not available in the first 2 cases; the diagnosis in these being based on clinical examination, suspicious radiographs and representative tissue obtained at biopsy. Fine-needle aspiration biopsy was done initially in every patient, open biopsy was performed in 2 patients where the diagnosis was not confirmed by fine-needle aspi-

9 patients with sternoclavicular tuberculosis

No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	28	M	B	1	+	6	55	+	–	1	1	2	1	48	18	2,3
2	18	M	L	1	–	9	32	+	–	2	1	1	1	90	16	1
3	41	M	R	1	+	11	48	+	–	1	1	1	1	78	15	1
4	29	F	R	2	–	10	102	+	–	1	1	1	2	72	16	3
5	39	M	R	1	–	32	30	+	–	1	2	2	2	50	16	2
6	50	F	L	3	–	8	78	+	–	1	2	2	1	35	14	1
7	37	M	L	1	+	12	46	+	–	1	1	2	1	28	15	1
8	22	M	R	3	–	14	72	+	–	1	2	2	1	64	16	2
9	34	M	R	1	+	12	38	+	–	1	2	2	2	18	16	1

A Age	2 Possible cystic lesion
B Sex	K Bone scan
C Involved side	1 Not done
R Right	2 Done
L Left	L CT scan
B Bilateral	1 Not done
D Presenting complaint	2 Done
1 Pain and swelling	M MRI
2 Discharging sinus	1 Not done
3 Swelling	2 Done
E Constitutional symptoms	N Follow-up (months)
F Duration (months)	O Duration of anti-tubercular treatment (months)
G ESR (mm)	P Final healing
H Mantoux positive (+)	1 No sequelae
I HIV status negative (–)	2 Restricted motion at shoulder
J Plain radiograph	3 Ugly scar
1 Unremarkable	

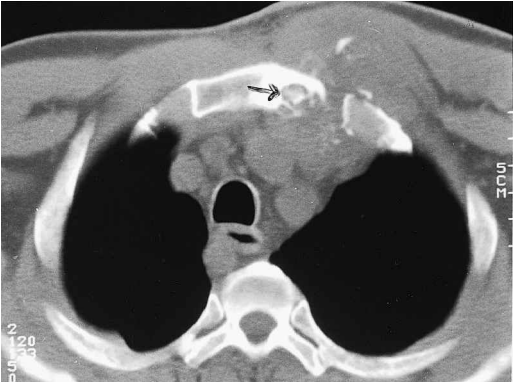


Figure 1. Case 7 (upper left). Distinct swelling near the sterno-clavicular joint.

Figure 2. Case 4 (upper right). Sinus near the sternoclavicular joint.

Figure 3. Case 9. CT scan at the level of the sternoclavicular joint showing joint destruction and evidence of some soft tissue swelling anteriorly. Note sequestration of lateral end of the sternum (arrow).

ration. At the time of open biopsy, debridement was done if frankly inflamed tissue was found. All the patients were put on an anti-tubercular regimen (ATT) including four drugs—i.e. rifampicin (450 mg daily), isoniazid (300 mg daily), ethambutol (800 mg daily) and pyrazinamide (1000–1500 mg in divided doses) in the initial intensive phase. After 2–4 months of ATT, depending on the clinical response to treatment, pyrazinamide was omitted, followed 1 or 2 months later by the omission of ethambutol. INH and rifampicin were continued as maintenance therapy for 14–18 months. If the patient did not respond to treatment for 2 months or the symptoms deteriorated after starting ATT, the lesion was surgically debrided, and the intensive phase of ATT was continued until a therapeutic response was obtained. Final outcome of therapy was judged on clinical grounds and a continual decrease in ESR. If in doubt, a CT scan or MRI was done to look for evidence of healing.

All the patients were started with a 4-drug regimen of ATT. In one case with bilateral disease, debridement was combined with open biopsy on the right side and ATT was started after diagnostic confirmation; the left side was not debrided primarily. With ATT, the right side showed signs of healing with unabated symptoms on the left side which induced us to debride the left side at 3 months. Another patient (case 8) showing no response to the ATT was subjected to surgical debridement after 2 months of ATT. The patients invariably showed evidence of local healing of the lesion within 6 months of the appropriate treatment. However, ATT was continued for 14 months in 8 patients and 18 months in one patient with bilateral disease.

Outcome

The mean follow-up was 54 (18–90) months. At the time of the last one, all the lesions had healed with no recurrence, 5 without sequelae and 3 had residual limitation of motion of the affected shoulder. 2 of these patients (1 and 8) had undergone debridement after 2–3 months of ATT, when they did not respond to the closed treatment. 2 patients (1 and 4) had ugly-looking local scars at the site of the sinus/biopsy.

Discussion

With the resurgence in the incidence of tuberculosis due to multidrug resistance strains and AIDS, the attention of the medical community all over the world has refocused on the disease (Watts and Lifeso 1996). Previous reports on sternoclavicular tuberculosis have been in the form of limited case reports alone: Martini (1988) found 1 case of 642 with osteoarticular TB, while Tuli (1993) reported 4 of a total of 1,074 cases. The diagnostic use of CT/MRI has been stressed in only one report (Yasuda et al. 1995).

We have found that involvement of the sternoclavicular joint occurs oftenest in middle-aged males. The clinical presentation varied considerably in the 9 patients. The 3 presenting complaints in decreasing order of frequency were: pain and swelling, swelling alone and a discharging sinus. The patients with pain and swelling showed more destruction of the joint, which was seen on CT scans (Figure 3). We feel that the disease has a dual course—a more aggressive one leading to a painful, destroyed joint associated with constitutional symptoms or a slowly progressive, relatively painless disease without constitutional symptoms and less joint destruction. This could be due to differences in the virulence of the organisms and the resistance of the host. Swelling, however, was the commonest mode of presentation (9/10 joints). TB should be suspected when painful swellings are seen in this region.

Although TB often frequently occurs in underdeveloped countries, the disease at this site was initially misdiagnosed in 5 of our cases (2 treated by a physician and 3 given a steroid injection into the subdeltoid bursa). This probably indicates that TB is not readily suspected in unusual sites. Conventional radiographs are not very useful in diagnosing the pathology at this site (Yasuda et al. 1995). Martini (1988) found tomograms to be helpful in the single case he saw in his series. CT scans show the extent of joint destruction well and MRI delineates the abscess better in the soft tissues.

Although previous authors (Martini 1988, Tuli 1993) found no indication for surgical excision, it is our experience that debridement at the time of biopsy is associated with earlier healing. Residual sequelae in the form of shoulder motion restriction

were also less common in these patients.

The pathogenesis and source of infection are debatable. The prevalent view is that the infection could originate from a fresh or reactivated pulmonary focus which has spread hematologically. This is the usual pattern of osteoarticular tuberculosis in other joints (Enarson et al. 1979). However, Yasuda et al. (1995) have also discussed the possibility of contiguous spread from an apical pulmonary tuberculous focus to the sternoclavicular joint. None of our cases had overt evidence of active pulmonary tuberculosis. Martini (1988) felt that the primary focus could be the medial end of the clavicle; in one of our cases, we saw an early osteolytic lesion in the medial end on plain radiographs. However, the disease had usually advanced to a stage where the whole joint was involved before sophisticated investigations could be done and a correct diagnosis made.

The duration of drug therapy in our series ranged from 14 to 18 months. It is our policy to continue the chemotherapy for 1 year after the first signs of a clinical response. We suggest early surgical debridement in markedly damaged joints.

No benefits in any form have been or will be received from a commercial party related directly or indirectly to the subjects of this article. No funds were received in support of it.

Dhillon M S, Gupta R, Rao K S, Nagi O N. Bilateral sternoclavicular joint tuberculosis. *Arch Orthop Trauma Surg* 2000; 120 (5-6): 363-5.

Enarson D A, Fuji M, Nakielna E M, Grzybowski S. Bone and joint tuberculosis: a continuing problem. *Can Med Ass J* 1979; 120: 139-45.

Martini M. *Tuberculosis of the bones and joints*. Springer-Verlag, Berlin Heidelberg New York 1988; 149-50.

Tuli S M. *Tuberculosis of the skeletal system*. Jay Pee Brothers Medical Publisher, New Delhi 1993; 121-3.

Watts H G, Lifeso R M. Current concepts review. Tuberculosis of bones and joints. *J Bone Joint Surg (Am)* 1996; 78: 288-98.

Yasuda T, Trauma K, Fujiwara M. Tuberculous arthritis of the sternoclavicular joint - a report of three cases. *J Bone Joint Surg (Am)* 1995; 77: 136-9.

Yood R A, Goldenberg D L. Sternoclavicular joint arthritis. *Arthritis Rheum* 1980; 23: 232-9.