Skeletal brucellosis in Iraqi patients

TAHA I AL-RAWI,¹ A J THEWAINI,² A R SHAWKET,¹ AND
GH M AHMED¹

From the ¹Department of Rheumatology and Rehabilitation, Al-Kindi General Hospital, Baghdad, Iraq, and the ²Al-Razi Medical Laboratory, Saadoon Street, Baghdad, Iraq

SUMMARY The clinical features of 21 episodes of skeletal brucellosis in 17 Iraqi patients are reported. Six had monarthrititis of a large joint, six had spondylitis, and five had spondarthritis. Brucellosis remains a major health problem in Iraq. The disease is transmitted to man through the ingestion of unpasteurised milk or milk products but can also be acquired through physical contact.

Key words: *Brucella abortus*, monarthrititis, spondylitis, spondarthritis.

Patients and methods

Seventeen consecutive patients attending our rheumatology clinic with skeletal manifestations considered to be due to brucellosis were studied.

In addition to obtaining a history, physical examination, and x rays, the following investigations were performed: haemoglobin and leucocyte count, erythrocyte sedimentation rate (ESR), urine examination, latex fixation test for rheumatoid factor, antistreptolysin O titre, antinuclear factor, lupus erythematosus cell preparation, C reactive protein, serum uric acid, rose bengal test using a concentrated suspension of *Brucella abortus* (Weybridge strain) stained with rose bengal (Bio-Merieux), and an agglutination test with *Brucella abortus* antigen (Burroughs-Wellcome). HLA typing was done using the microlymphocytotoxicity technique only for the young patients in the spondylitic and spondarthritic groups. A blood culture for brucella was carried out in 12 patients and synovial fluid culture in three. A tuberculin test was done only in one patient with spondylitis. All cases were followed up for one year. In cases of relapse the ESR, leucocyte count, rose bengal and brucella agglutination tests were performed. The diagnosis of brucellosis was made on the basis of suggestive history in association with the finding of a positive rose bengal screening test and a positive agglutination titre ($\geq 1/320$).

Results

Twenty one episodes of skeletal brucellosis were identified in 17 patients (eight men, nine women). Their ages ranged from 19 to 65 years with a mean of 38 for men and 34 for women. There were two farmers, three labourers, seven housewives, two students, two clerical workers, and a manager of a dairy plant. Sixteen patients gave a history of ingestion of unpasteurised home-made cream, butter, or white cheese. One patient had close contact with domestic animals and raw meat.

All the 17 patients presented primarily because of osteoarticular manifestations. Joint or spinal involvement was preceded by a febrile illness lasting for one to eight weeks in 14 patients. The patients fell into three groups: six had monarthrititis of a large joint (three had involvement of the knee, two had hip involvement, and one unilateral sacroiliitis), six had spondylitis, and the remaining five had spondarthritis.

Generalised symptoms of fever, sweating, rigor, and weakness were common to all three groups (Table 1).

The patients in the monarticular group characteristically had severe joint pain localised to the affected joint, and there were moderate effusions in three patients with knee joint involvement. In a single case of unilateral sacroiliitis the patient presented with severe pain and tenderness of the sacroiliac area, fever, sweating, and rigors.

In the spondylitic group backache was the presenting symptom in all the patients and was severe in four. Localised tenderness was present in all of

Accepted for publication 11 March 1988.

Correspondence to Dr Taha I Al-Rawi, Department of Rheumatology and Rehabilitation, Al-Kindi General Hospital, Baghdad, Iraq.

Table 1 Presenting clinical features

Symptoms and signs	Monarthritic group		Spondylitic group		Spondarthritic group	
	No	(%)	No	(%)	No	(%)
Joint pain	6	100	—		5	100
Fever	6	100	5	83	4	80
Sweating	5	83	4	66	4	80
General weakness	5	83	4	66	3	60
Rigor	3	50	2	33	1	20
Headache	3	50	2	33	4	80
Weight loss	1	17	3	50	1	20
Backache	—		6	100	5	100
Joint swelling	3	50	—		2	40
Hepatomegaly	—		3	50	—	
Splenomegaly	1	17	3	50	—	

them. Hepatosplenomegaly was found in three of these patients. The lumbar spine was involved in four, the dorsal spine in two.

All five patients with spondarthrititis had backache of moderate to severe degree with localised tenderness at different levels in the spine. Peripheral arthritis involving a single joint was present in four of this group: in three the knee and in one the hip; the fifth had simultaneous knee and hip involvement.

The haemoglobin and leucocyte counts were normal in all 17 patients. The ESR was raised in 16 patients ranging from 40 to 97 mm in one hour (Westergren). It was normal in one patient in the spondarthritic group. Tests for rheumatoid factor, antinuclear antibodies, and C reactive protein were negative. Antistreptolysin O titres and serum uric acid concentrations were normal. None of the patients had evidence of pre-existing rheumatoid arthritis, systemic lupus erythematosus, rheumatic fever, or ankylosing spondylitis before infection with brucella. None of those tested possessed HLA-B27.

The rose bengal test was positive in all patients and brucella agglutination titres ranged from 1/320 to 1/2560. The brucella agglutination titre remained raised at the original level for from three to eight months after treatment had stopped and clinical recovery had occurred.

Of these 17 patients, *Brucella* spp culture (blood or joint fluid, or both) was attempted in 12, and the diagnosis was confirmed by isolation of the organism in five.

Of the six patients with monarthrititis, *Brucella abortus* was isolated from blood culture alone in one and from both synovial fluid and blood in two. Culture was not attempted in one patient.

Of the six patients with spondylitis, blood culture was performed in four and *Brucella* spp isolated

from one patient. Of the five patients with spondarthrititis, blood culture was performed in three and *Brucella* spp isolated in one.

In the spondylitic group the radiographic appearance varied; in one patient it was normal and in a second there were marked destructive changes in the intervertebral facet and in the adjacent surfaces of D12 and L1 vertebrae. In a third patient there were lesser changes at D7 and D8.

The remaining patients showed spur formation at the anterior aspect of the vertebral bodies with mild to moderate destructive changes at the intervertebral facet in one patient.

TREATMENT

All patients were treated with 2 g tetracycline daily and two tablets trimoxazole twice daily for six weeks with complete recovery.

RELAPSES

During the following year three patients relapsed three months after treatment. One of these had spondylitis, another monarthrititis of a hip, and the third monarthrititis of a knee. The recurrences were in the joints originally affected. A fourth patient with spondylitis of the dorsal spine relapsed after five months, presenting with acute left mammary pain and marked local tenderness. Radiographs showed a fracture of the fifth and sixth ribs at the mid-clavicular line. The patient denied any trauma. The ESR was 82 mm/h and the brucella agglutination titre was 1/640. In the initial attack the ESR had been 47 mm/h and the titre 1/640. Pathological fracture from osteitis of the involved ribs due to brucellosis could not be ruled out. In all patients who relapsed the ESR was raised, the leucocyte count was normal, the rose bengal test was positive and the brucella agglutination titre was as high or higher than the original titre.

Discussion

The mean age of the patients (36 years) was higher than that reported by Rajaei.¹ The ESR was high in 16 patients and remained significantly raised after treatment in six patients, despite full clinical recovery. During the recurrent attacks, which occurred in four patients, the ESR was higher than it had been at the initial presentation. These findings differ from those of Norton.² Reports of the prevalence of arthralgia in brucellosis vary³ from 10% in one series⁴ to 87% in another.⁵

All these 17 patients presented with osteoarticular manifestations primarily and were subsequently discovered to have brucellosis. In monoarticular involvement the only absolute proof that brucellosis is the cause of the arthritis is the recovery of organisms from the joint fluid or synovial membrane. There are few reported cases of monoarticular brucellar arthritis and even fewer that have been proved bacteriologically.^{3 6 7} *B abortus* was isolated from the joint fluid of two out of three patients with monoarticular arthritis. This brucella isolation rate (66%) is similar to the 72% reported by Buchanan *et al*⁸ and is roughly comparable with that reported by Norton.² The laboratory should be notified whenever brucella infection is suspected⁹ so that special care can be taken.

Brucellosis with osteoarticular manifestations may simulate many rheumatic disorders. Lack of

awareness by clinicians can cause misdiagnosis and delay in treatment. Two patients in our series were treated for acute lumbar disc prolapse with analgesics and physiotherapy before the diagnosis was made. Two patients with monoarthritis of the knee had arthrocentesis and intra-articular steroid treatment with temporary relief. One patient was treated for tuberculosis. Brucellosis is a preventable disease, and in those areas where it remains endemic authorities should initiate an active programme to eliminate the disease by dealing with the animal reservoir and by pasteurisation of milk products.

References

- 1 Rajaei A. Brucella arthritis. *Iranian Journal of Medical Science* 1980; **11**: 45–9.
- 2 Norton W L. Brucellosis and rheumatic syndromes in Saudi Arabia. *Ann Rheum Dis* 1984; **43**: 810–5.
- 3 Kelly P J, Martin W J, Schirger A, Weed L A. Brucellosis of bones and joints. *JAMA* 1960; **174**: 347–53.
- 4 Makin M, Alkalaj I, Rosansky R. Monoarticular brucellar arthritis. *J Bone Joint Surg [Am]* 1957; **39**: 1183–6.
- 5 Feiz J, Sabbaghian H, Miralai M. Brucellosis due to *Brucella melitensis* in children. *Clin Pediatr (Phila)* 1978; **17**: 904–7.
- 6 Coventry M B, Ivins J C, Nichols D R, Weed L A. Infection of the hip by *Brucella suis*. *JAMA* 1949; **141**: 320–6.
- 7 Spink W W. *The nature of brucellosis*. Minneapolis: University of Minnesota Press, 1956.
- 8 Buchanan T M, Faber L G, Feldman R A. Brucellosis in the United States 1968–1972. *Medicine (Baltimore)* 1974; **53**: 403–13.
- 9 Castaneda M R. Laboratory diagnosis of brucella in man. *Bull WHO* 1961; **24**: 73.