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BRUCELLAR SPONDYLITIS

Report of 6 Cases

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Brucellosis is an infective disease of world-wide distribution. It used to be endemic in the Mediterranean area, where it was first diagnosed and where it received its initial name "Malta fever".

All three varieties of brucellae are primarily pathogenic to animals, but they are frequently transmitted to man, as stated by Makin et al. (1957). They are the cause of the well-known clinical entity of "undulant fever" or "Mediterranean fever" or "Rock of Gibraltar fever", etc.

The disease may lead to serious complications arising from various systems, the degree of their severity depending on the involved type of brucella and the affected system. According to Hughes (1897), complications may involve the following systems or viscerae, stated here in order of frequency: the neuro-psychic sphere, bones and joints, cardiovascular system, liver, spleen, genitourinary system, lungs, etc.

Musculoskeletal complications of brucellosis were first diagnosed in the early days of the present century by Kennedy (1904), who published a paper on "Brucellar Subdeltoid Bursitis".

The involvement of bones and joints may adopt many forms, with symptoms appearing during the acute stage of the illness or later. These forms fall into the following categories:

1. Articular pains, which according to Rimbeaud (1947) should not be confused with diffuse pains of bones and joints appearing in almost one-third of the cases of brucellosis.

2. Acute arthritis, which may be of monoarticular or multiarticular localisation, this latter form also being known as "Mediterranean pseudorheumatism, as stated by Cantaloube (1910).

3. Osteitis.

4. Chronic arthritis, which is of rather late onset.

Brucellar spondylitis has been described in this last category together with chronic arthritis of the hip and sacroiliac arthritis, which, according to Sching (1957), frequently occur simultaneously.

M A T E R I A L

Six cases of brucellar spondylitis have been treated at the Orthopaedic Department of the University of Athens during the years 1963–70.

This Department is part of a busy general hospital of 650 beds, and includes an out-patient clinic through which a large number of patients are admitted because of back complaints (18–22 per month). Table 1 shows the sex, age and occupation of our patients, as well as the number of confirmed previous brucellar infections, the time that has passed between the initial brucellosis, and the appearance of acute back symptoms due to the spinal complication.

Table 1.

No. of cases	Age	Sex	Occupation	Previous brucellar infection	Period of time between initial brucellosis and appearance of spinal complication
1	63	M	Physician	No	—
2	45	M	Farmer	?	? 25 years
3	28	M	Farmer	Yes	6 months
4	45	M	Farmer	Yes	14 months
5	50	M	Farmer	No	—
6	50	M	Farmer	Yes	22 months

All cases were diagnosed in the context of acute back symptoms. Neuro-examination (—).

Fever was a constant finding in all cases except one (no. 4) and ranged from 37.2 to 38°C for 4–5 weeks. Two cases (nos. 3 and 5) had a typical undulant temperature curve. Two patients presented mental disorders and were put under psychiatric care; there was also enlargement of the spleen and lymph nodes (cases 3 and 5).

The correlation of the history, occupation and clinical findings triggered off a “diagnostic reflex” which orientated us toward the diagnosis and called for more specific investigations.

Table 2 shows the laboratory tests performed in our series. All patients had a positive Wright agglutination test (1:320). The test which should not be confused with the Widal test for typhoid fever is specific for brucellosis, the agglutinins

of which are present in high or increasing titer in the serum of suspect patients. A positive test is of great diagnostic value. E. S. R. was elevated in all patients (up to 43/62) and remained so for 3-4 weeks. The W. B. C. was increased in 2 cases (nos. 2 and 4) with marked lymphocytosis (up to 65 per cent). It started to decrease after 2-3 weeks of treatment.

Blood cultures were positive in 2 cases (nos. 3 and 4). C.S.F. examination was not performed in our series.

Table 3 shows the radiological findings in AP and lateral views. Narrowing of the involved disc space was a constant finding, together with irregular margin and sclerotic changes of the adjacent surfaces of the involved vertebrae. Osteophytes and bone spurs were constantly present.

Table 2.

No. of cases	Laboratory findings
1	Wright test (+) E.S.R. elevated.
2	Wright test (+) E.S.R. elevated. W.B.C. increased (11,500).
3	Wright test (+) E.S.R. elevated. Blood culture (+).
4	Wright test (+) E.S.R. elevated W.B.C. increased (13,100). Blood culture (+).
5	Wright test (+) E.S.R. elevated.
6	Wright test (+) E.S.R. elevated.



Figure 1. Long-standing changes of the vertebral bodies and disc space. Note voluminous osteophyte.

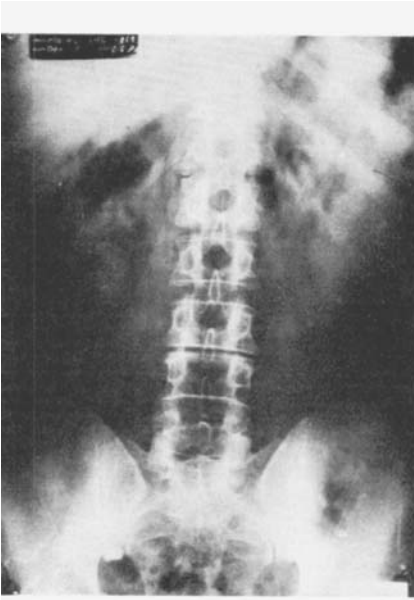


Figure 2.

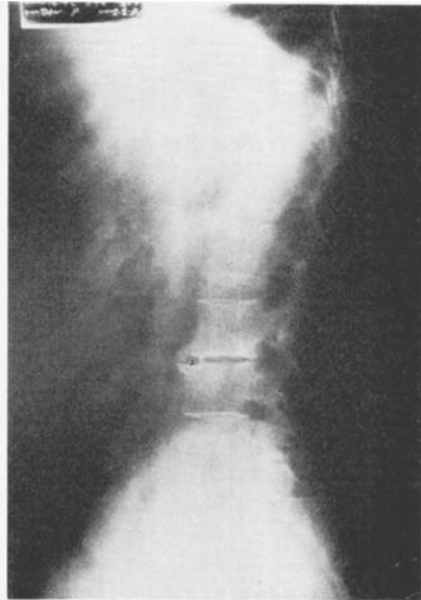


Figure 3.

Figures 2 and 3. Radiographs taken on admission. No symptoms before acute onset of disease 6 days prior to admission.



Figure 4. Radiograph taken on admission. Note amount of destruction. The patient had brucellosis 6 months prior to admission.

Table 3.

No. of cases	Radiological findings
1	Narrowed disc space (L4-5). Irregular margin of bodies, sclerotic adjacent surfaces (L4-L5). Osteophytes.
2	Narrowed disc space (D7-8). Irregular margin of bodies, sclerotic adjacent surfaces (D7-D8). Osteophytes.
3	Narrowed disc space (L2-3). Irregular margin of bodies, sclerotic adjacent surfaces (L2-L3). Bone spurs.
4	Narrowed disc space (L4-5). Irregular margin of bodies, sclerotic adjacent surfaces (L4-L5). Osteophytes.
5	Narrowed disc space (L3-4). Irregular margin of bodies, sclerotic adjacent surfaces (L3-L4). Osteophytes.
6	Narrowed disc space (L2-3). Sclerotic adjacent surfaces (L2-L3). Voluminous osteophytes.

Table 4.

No. of cases	Treatment
1	Tetracycline and streptomycin administered for 6 and 3 weeks respectively. Back support: 1 year.
2	Chloramphenicol administered for 4 weeks. Dorsolumbar brace: 1 year.
3	Chloramphenicol administered for 4 weeks. Back support: 6 months.
4	Tetracycline and streptomycin administered for 6 and 3 weeks respectively. Back support: 1 year.
5	Tetracycline and streptomycin administered for 6 and 3 weeks respectively. Back support: 8 months.
6	Tetracycline and streptomycin administered for 6 and 3 weeks respectively. Back support: 6 months.

At this stage a tentative diagnosis of brucellar spondylitis was established, and the following conditions were considered and subsequently excluded in the differential diagnosis: (1) TB spondylitis, (2) osteomyelitis, (3) prolapse of an intervertebral disc, (4) post-typhoid osteitis, (5) hydatid cysts and parasitic diseases, (6) neoplasms, (7) Scheuerman's disease, (8) osteoarthritis of the spine.

Table 4 shows the treatment followed in our series, after a final diagnosis had been reached.

Four cases received tetracycline (2 g daily for 6 weeks) together with streptomycin (1 g daily for 3 weeks). Two cases were put on chloramphenicol (2 g daily for 4 weeks) because typhoid osteitis had been initially suspected.

All patients were kept strictly in bed during treatment, which was discontinued after repeated assessments of clinical and laboratory findings.

Back supports were ordered for all patients (except case no. 2 who wore a full back brace) and they were permitted out of bed with instructions to wear their support for a period of 6 months to 1 year according to their condition.

All patients were followed for 9 months to 2½ years; they showed no signs of recurrence and their tests were within normal limits. They have gone back to work but have avoided heavy activities.

DISCUSSION

Our series concerns 6 male patients ranging in age from 28 to 63. According to Epstein (1969) males are affected more frequently than females.

It is noteworthy that the disease shows a predilection for farmers and could be considered a professional disease, as it mainly affects persons coming into contact with goats, hogs and other farm animals. Many farmers and members of the rural population in this part of the world still drink unpasteurized or even unboiled goats milk, or eat cheese and butter made from such milk, through which brucellosis can be transmitted.

The small number of our series, compared to the number of patients coming from all parts of the country and attending the hospital for back problems, shows the low incidence of brucellar spondylitis. This is opposed to Epstein's (1969) statement that it is a common complication.

The lumbar spine is an elective localisation, according to Schintz (1957), as has also been noted in our series. Janbon et al. (1950) point to the incidence of cervical localisations, especially at C₅-C₆ level.

Half the cases in our series had no history of brucellosis, thus reinforcing the view that a complication may appear without any previous signs of the initial disease. In the other half the period of time between the initial infection and the onset of brucellar spondylitis ranged from 6 months to 2 years. There were only vague symptoms from the back, of 2-3 months' duration, before the acute onset of the disease.

The infective process involves the vertebral bodies and neural arches and proceeds toward the intervertebral disc and ligaments. Voluminous abscesses may appear and the infection may find its way into the spinal canal, involving the meninges and roots. This last finding was not observed in any of our cases. In an extensive review, Jammitt (1958) described some cases with pressure on the spinal cord. In the

usual form of the disease there is involvement of 2 vertebrae, and there is a possibility of multiple localisations.

Clinically, brucellar spondylitis presents as acute low-back pain, which may be accompanied by sciatica. In cervical localisations the pain has a cervicobrachial distribution. Elevated temperature is an almost constant finding, but the presence of an abscess is much less frequent. General malaise, weakness, nervousness, insomnia and mental disturbances may be present, together with hypersplenism, enlarged lymph nodes, and ill-smelling sweats. The disease nowadays tends to present with an atypical clinical appearance and may follow an atypical course. This could probably be due to the irrational use of antibiotics, which are still being prescribed in almost every "feverish" condition and to attempts at "abortive" treatment of brucellosis in the past.

As stated by Arseni (1967), the "Wright agglutination test" may be pseudopositive in patients who have been vaccinated for cholera. Sternal marrow aspiration reveals characteristic but atypical granulomas. Blood and tissue cultures may be of help in diagnosing the disease, although Kelly et al. (1960) state that blood culture is of little service in complications involving the bone and joints. The C.S.F. according to Arseni (1967) shows high titers of agglutinins and a disturbed ratio of cells/proteins.

The radiological investigation reveals a coexistence of an osteolytic and osteogenic process. In young patients the destruction of the vertebral bodies predominates, as described by Epstein (1969), while in abortive forms of the disease there may be no radiological findings.

The treatment of brucellar spondylitis is conservative, as opposed to the surgical management of other complications with bone and joint involvement. In severe cases corticosteroids may be added to the antibiotic treatment. Hydrocortisone or prednisone are administered in respective doses of 100 mg parenterally, followed by 50 mg orally or 20 mg of prednisone for 3-4 days. Spink (1956) insists on the importance of reassurance needed by all patients, that theirs is a self-limiting disease from which they will completely recover.

S U M M A R Y

General remarks on brucellosis are presented and six cases of brucellar spondylitis are described. Comments on various aspects of the disease are made.

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