

Fever, knee pain and calf swelling

Friday, 01 September 2006

A 53-year old woman presented to us because of pain and swelling of the right knee joint for the previous 2 days before admission. She took non-steroidal anti-inflammatory medication but experienced only minimal and temporary relief for a few hours. The pain and swelling got gradually worse. She checked her temperature and it was 40.0 C. The day before admission while the symptoms of the knee joint persisted, edema and pain appeared in the upper half of the calf musculature. The past medical history was significant for partial resection of the larynx due to idiopathic paralysis and a thyroidectomy for goitre.

Physical examination on admission showed a temperature of 38.50 C, blood pressure was 140/80 mmHg, respirations 14 per minute and pulse: 90 per minute regular. A tracheostomy was evident. The right knee had signs of inflammation: pain, redness, and edema. There was accompanying edema and pain of the calf musculature. The rest of the physical examination was normal.

Laboratory tests showed a leukocytosis with a shift to the left (15.250 leukocytes/mm³ with 80,9% neutrophils) and a markedly increased C-reactive protein (28,84mg/dl (normal: 0-0.5 mg/dl) and erythrocyte sedimentation rate (120 mm/1st hour (normal:0-20 mm/1st hour). Magnetic resonance imaging (MRI) of the right knee and the right calf (figure 1) disclosed extensive synovitis of the right knee with the concomitant presence of increased arthritic fluid. There was accompanying inflammation of the muscle groups of the calf and especially the gastrocnemius muscle and compression of the popliteal vein in the popliteal fossa.

What was the cause of fever, knee pain, and calf swelling? What is the diagnosis?

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Diagnosis

On Doppler ultrasound there was thrombosis of the right tibial and peroneal vein. Paracentesis of the arthritic fluid revealed 18.000/mm³ leukocytes (98 percent were neutrophils), a high protein level: 4,5 gr/dl, increased lactic dehydrogenase levels: 2.603 IU/l and low glucose levels: 48 mg/dl. Culture of the arthritic fluid yielded *Streptococcus pyogenes*. Cytology was negative for malignant cells.

Due to allergy to penicillin the patient was commenced on clindamycin intravenously with prompt clinical improvement. Laboratory indices returned as well to normal. Low molecular weight heparin (tinzaparin) was administered for the deep venous thrombosis. A thrombophilic screen including (antithrombin III, protein C, protein S, factor V Leiden, anticardiolipin antibodies, antiphospholipid antibodies, lupus anticoagulant, factor II, VII and VIII) did not reveal any thrombophilic disease. The thrombophilic screen is going to be repeated after complete resolution of the infection. The following tests were normal as well: rheumatoid factor, antinuclear antibodies, anti-dsDNA antibodies, anti-ENA screen (anti-SSA, anti-SSB, anti-Sm, anti-Scl70, anti-Jo1), Wright agglutination, antibodies against *Borrelia burgdorferi*, HbsAg, anti-HCV, anti-streptolysin titre, C3 and C4 complement components and serum protein electrophoresis. A transthoracic echocardiogram was normal.

Teaching points

- Septic arthritis remains one of the medical emergencies that the general physician and the infectious disease specialist alike have to rule out when they encounter a patient with fever and signs of inflammation of a joint. Deep venous thrombosis is another ailment necessitating prompt diagnosis and treatment. Rarely has an association of septic arthritis with deep venous thrombosis been reported in the literature. In such a case report the thrombosis was not in an adjacent area but in another anatomical site. 1

- Other rheumatological diseases such as Behcet's disease, rheumatoid arthritis and systemic lupus erythematosus has been reported in association with thrombosis. The presence of antiphospholipid antibodies in these diseases has been implicated in the pathogenesis of the thrombotic events, but results from various studies have been conflicting.2, 3 In these ailments thrombosis occurs usually in an area remote to the site of the arthritic involvement. Baker's cyst is another relatively common orthopedic disease leading to pain in the posterior aspect of the knee joint and the calf and associated signs of pseudothrombosis. While in the majority of cases with Baker's cyst there is no evidence of thrombus on radiological imaging, one has to bear in mind the coexistence of the two entities. 4

- Our patient's case is unique in that a concomitant manifestation of arthritis and thrombosis in the same topography and at the same time was evident from the outset. The postulated mechanism is that the infection per se through pressure effect on the juxtaposed vasculature was the cause of the deep venous thrombosis in accordance with the data obtained by the MRI. A similar mechanism (through pressure effect) has been described in injuries of the joint and in neuropathic arthropathy with increased arthritic fluid. 5, 6

- Infectious processes in various anatomical sites can extend and lead to thrombosis of adjacent venous vessels. 7 Thus, an infection of the ovary can extend to the neighboring ovarian vein and an infection of the mastoid can lead to sigmoid sinus thrombosis. 8 In these infections heparin treatment has been used in association with the antibiotic therapy and the general supportive care. 9

- In conclusion, our case report suggests that physicians have to look for signs of accompanying thrombosis when they evaluate a patient with septic arthritis and vice versa, especially when edema is not confined to the joint.

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