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RESEARCH ARTICLE

Low back pain in young women: an unusual case.

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Abstract

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This is a case of a 28-year-old woman from Syria who was admitted to the Rheumatology Unit of the University of Padua Medical Center, Italy, because of severe low back pain (LBP). Laboratory investigations were performed to define the diagnose. The magnetic resonance (MR) images showing bone marrow involvement, could be suggestive of acute infarction. The hyperpyrexia, the elevation of LDH, ALP, AST and ALT levels, the reduction in the aptoglobina, the hyperbilirubinemia, noted at the 5th day of hospitalization, were suggestive of hemolytic anemia.

The suspicion led us to evaluate the haemoglobin electrophoresis and the sickle cell plus beta (HbS/β+)-thalassemia became evident.

This case emphasizes the importance of maintaining a broad differential diagnosis for a diffuse musculoskeletal disorder such as LBP. Therefore, in this case report, the clinical and instrumental data together with the laboratory investigations were useful to define the undiagnosed mild HbS/β+ thalassemia in geographic areas without newborn screening.

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Introduction:-

Chronic low back pain (LBP) is complex, dynamic and multidimensional, sustained by experiences of persistent distressing pain, loss and low self-worth, depression, premature aging due to a bad quality of life (1,2).

LBP could be a typical example of clinical features reflecting numerous morbidities including atypical manifestations of spondyloarthropathies (3). Moreover chronic LBP is widely frequent in the adult population and it represents a big health problem in developed countries; more than 70% of the population experiences an episode of LBP at some time in their lives (4). Evaluation of LBP prevalence is variable: over longer periods of time it showed an increase (5), or decrease with different intensities on pain score (6). We present a particular case of low back pain in a young woman with an unexpected diagnosis.

Case report:-

This is a case of a 28-year-old woman from Syria who was admitted to the Rheumatology Unit of the University of Padua Medical Center, Italy, because of severe LBP.

There were no evident signs of trauma, heavy work load, or osteoporosis. Pregnancy test was negative. She was immediately treated with a full dose of one non-steroidal anti-inflammatory drug, without benefit.

The physical examination uncovered forced supine decubitus, severe pain of spinous processes of the dorsal and lumbar vertebrae regions, hyperalgesia throughout the body, no fever. Deep tendon reflexes were decreased and there were motor deficits of the legs.

The abdomen was slightly distended with hyperactive bowel sounds; the liver and spleen were bulky. Nothing else of note to report at the physical examination. The patient's family history was negative for arthritis, psoriasis, spondyloarthritis, autoimmune diseases, but she reported occasional slight low back pain during the night.

Routine laboratory investigations were performed. Complete blood count showed hemoglobin (Hb) 9.5 g/dl, mean corpuscular volume of red blood cells 76 fl; C-reactive protein 432 mg/l, erythrocyte sedimentation rate 105 mm/hour, D-dimer 7927 µg/l, ferritin 3281 µg/l, aptoglobin 1.27 g/l, lactate dehydrogenase (LDH) 2405 U/l, alkaline phosphatase (ALP) 358 U/l, bone ALP isoenzyme 60 µ/l, alanine transaminase (ALT) 78 U/l, aspartate transaminase (AST) 90 U/l. The patient's body temperature rose during hospitalization and reached 39°C. An electrocardiogram and chest X-ray were negative and systemic infections were excluded.

The patient also underwent thoraco-abdominal Computer Tomography (CT), Magnetic Resonance (MR) Angiogram, and a transesophageal echocardiogram on the suspicion of spondylodiscitis, malignancy, aorta aneurysm or intramural hematoma: all of these were excluded. However, MR imaging of the dorsal (D) and lumbar (L) (Figure 1 A-B-C-E-F-G) vertebrae showed an abnormal heterogeneous signal pattern.

The MR images, with high signal intensity on T2-weighted and inversion recovery (IR) sequences, showing bone marrow involvement, could be suggestive of acute infarction; a vertebral endplate depression due to central infarction was also depicted. Axial T1-weighted spin-echo (SE)/IR, performed through dorsal vertebrae, showed concomitant bone marrow edema of the vertebra, ribs, humeri and sternum (Figure 2A); bulky liver and spleen were observed (Figure 2B).

Besides these aspects, in our patient's case, the elevation of LDH, ALP, AST and ALT levels, the marked reduction in the aptoglobina value (0.07 g/L) and the hyperbilirubinemia noted at the 5th day of hospitalization were highly suggestive of hemolytic anemia.

The suspicion led us to evaluate also the haemoglobin electrophoresis that highlighted Hb-A2 6.9%, Hb-A1 22.9%, Hb-S 69.2%, Hb-C was absent; total Hb 8.7g/dl.

Sickle cell plus beta (HbS/β+)-thalassemia became evident.

Discussion:-

HbS/β+, double heterozygosis, is rarer to observe with respect to sickle cell anemia (SCA). It is characterized by microcirculatory obstruction and subsequent ischemia and infarction, tumor emboli and compression, fibrin thrombi, cytotoxic injury, which can coexist (7). In this case ischemia rapidly causes pain, even before infarction is manifested. Infarction is a significant complication of SCA, and it may occur anywhere in the skeleton (8,9). MR imaging is likely the most sensitive radiologic form of investigation, as it can detect abnormality even a few days after ischemic insult (10). Furthermore, vertebral deformity without fracture is pathognomonic for SCA (H-shaped), just as observed in our case (11,12). Moreover, during the clinical evaluation of the patient an increase in liver and spleen volume were noted; these findings, confirmed by instrumental exams, represent typical organ involvement of hemoglobinopathy (7).

Conclusion:-

In conclusion, we presented a case of a young women, admitted with severe back pain, in which the clinical features simulate numerous morbidities. This emphasizes the importance of maintaining a broad differential diagnosis for a diffuse musculoskeletal disorder such as LBP. Therefore in this case report the clinical and instrumental data together with the laboratory investigations were useful to define the undiagnosed mild HbS/β+ thalassemia in geographic areas without newborn screening.

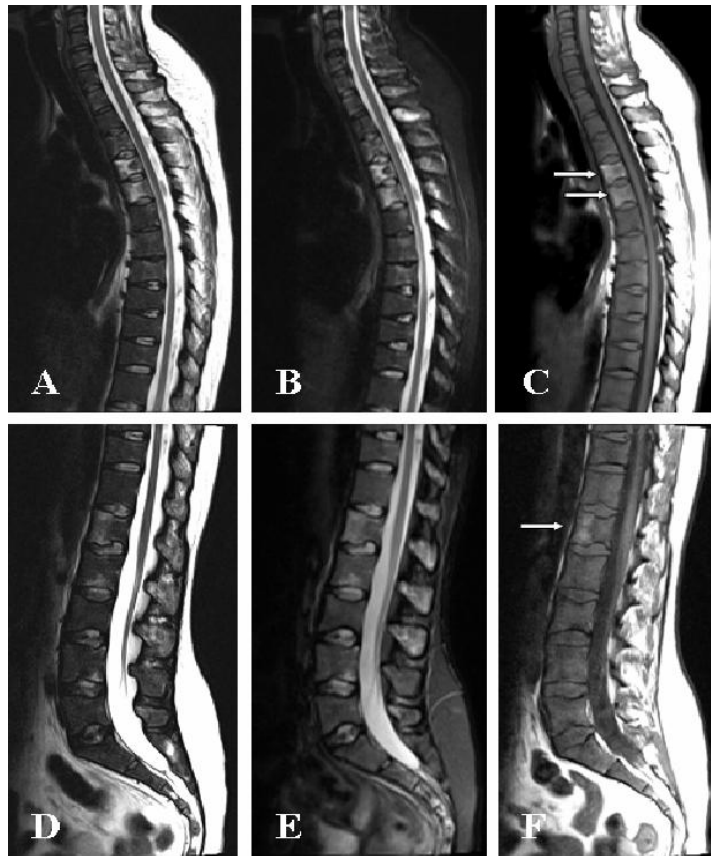


Figure 1: MR imaging of sagittal dorsal (A, B, C) and sagittal lumbar spine (D, E, F).

T2 w SE (A, D). T1 w SE/IR (B, E). T1 w SE (C, F)

A, C, D, F: diffuse low signal of bone marrow consistent with expansion of red marrow (conversion)

B, E: in fat saturated T1 w SE/IR few vertebrae show bright patchy signal consistent with edema

C, F: some vertebrae with edema in T1w IR show bright signal on T1w images consistent with blood products and consecutive bone infarcts.

Bright signal in D3-D4 and L1 is consistent with acute-subacute infarct (arrows)

Note diffuse initial "H shaped" deformity of vertebral bodies consistent with pathologic fractures

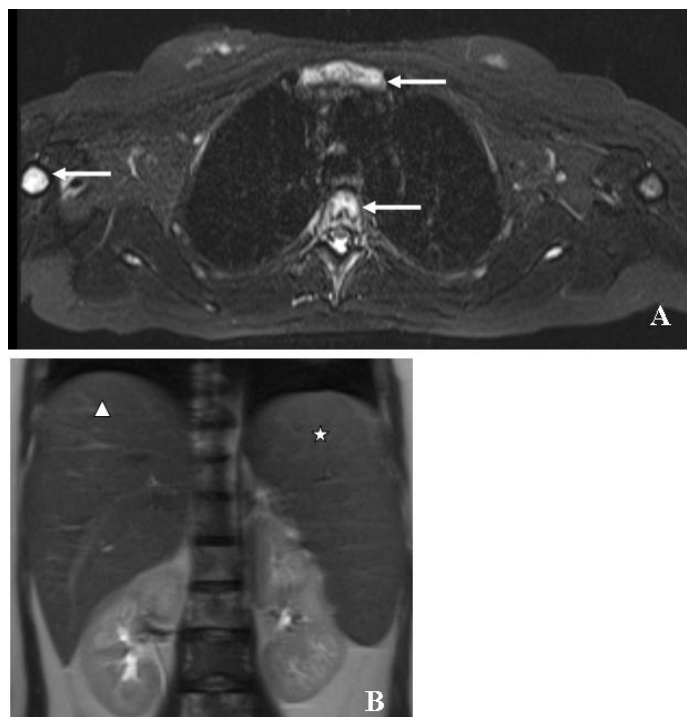


Figure 2. MR imaging. **A.** Axial T1 w SE/IR performed through dorsal vertebrae showing concomitant bone marrow edema of the vertebra, ribs, humeri and sternum (white arrows). **B.** Splenomegaly (star), hepatomegaly (triangle).

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