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INNER SPACES

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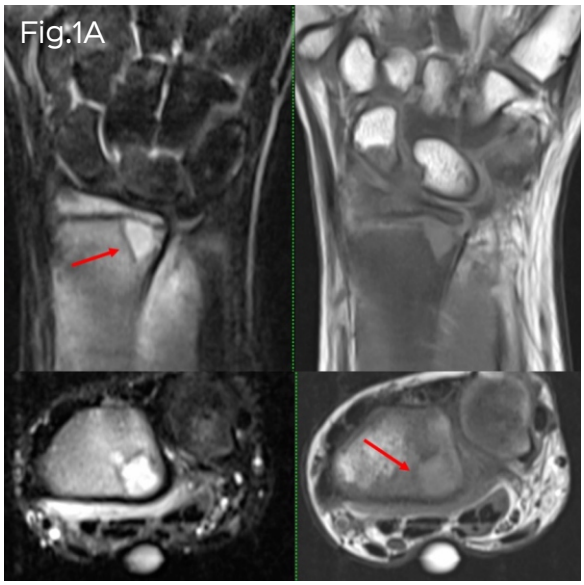
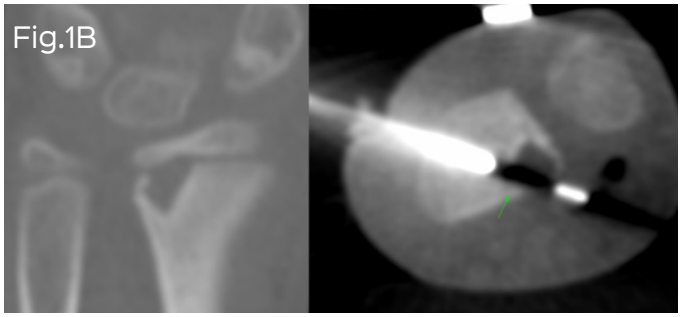
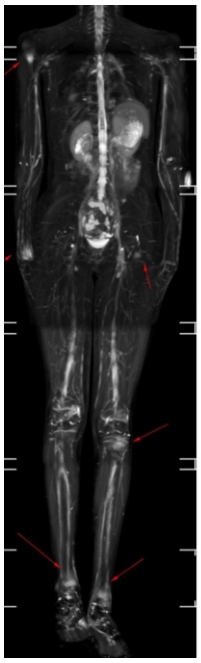
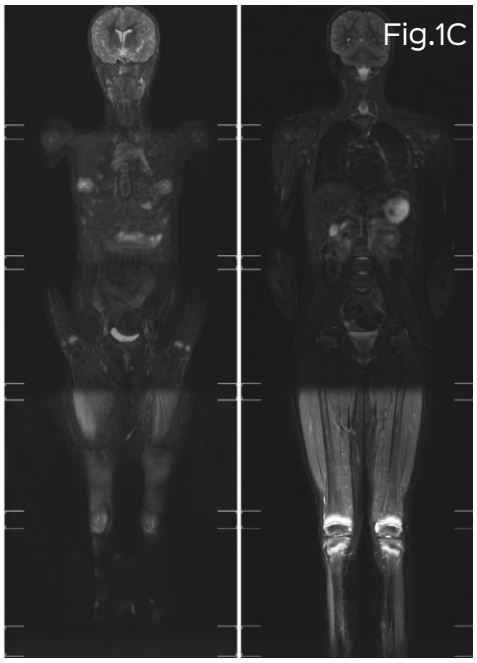
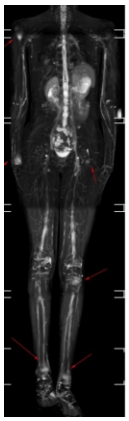
Chronic Nonbacterial Osteitis (CNO)

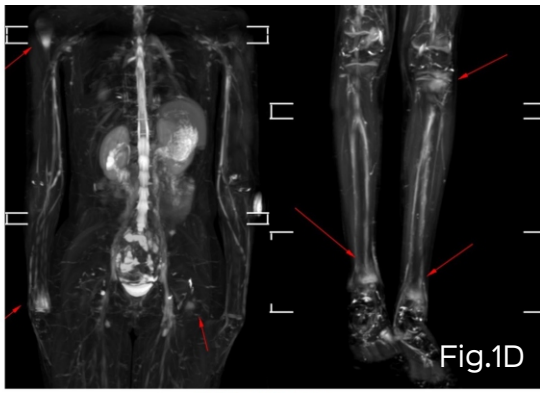












Multifocal disease

Fig. 1 (A-D): 13-years old girl came with pain in the wrist. The MRI (A) shows a distal radius metaphyseal lesion with marrow edema. A CT guided biopsy (B) was negative for any diagnosis. A week later, she developed ankle pain. The whole body MRI (C) shows multiple lesions, in the proximal humerus and both proximal and distal tibiae, some symptomatic, some asymptomatic. She was given intravenous pamidronate. The repeat whole body MRI (D) shows regression of all the lesions (two images on the right) compared to the pre-treatment MRI (image on the left).

Chronic nonbacterial osteitis is an unusual autoinflammatory condition that affects children, girls more than boys in the age range of 7-14. They present with single or multiple lesions in the bones. These lesions are osteolytic, but without a soft tissue mass and may have marrow and periosseous edema (Fig. 1A).

If there is a solitary lesion, a biopsy is usually done (Fig. 1B). This biopsy will typically be negative for any specific or definitive diagnosis, on both histology and microbiology. A negative biopsy, a metaphyseal lesion, the absence of extra-osseous extension and the age at presentation should then prompt a diagnosis of CNO.

In the past, CNO has also been referred to as chronic recurrent multifocal osteomyelitis (CRMO) and SAPHO.

At a glance:

- CNO is a condition that occurs in young children, girls more than boys
- Children present with metaphyseal lesions, symptomatic or asymptomatic, without soft tissue extension.
- Whole body MRI is the preferred modality of choice for diagnosis, staging and follow-up.

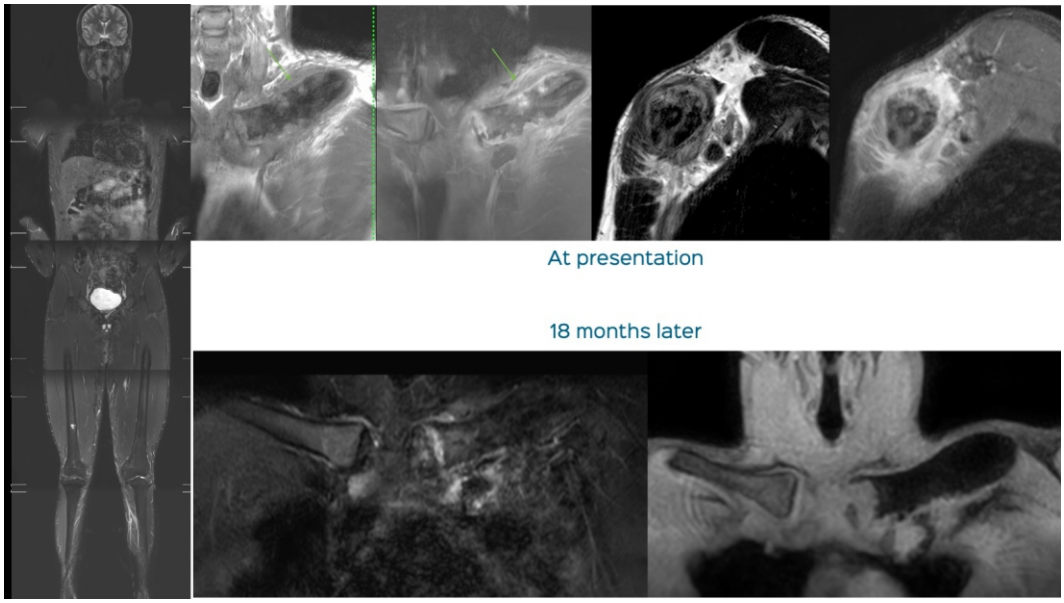


Fig. 2: 21-years old with a 2-years history of left clavicular swelling and pain. Three biopsies were negative. The rheumatologist strongly suspected CNO, since the clavicle is a typical site and asked for a whole body MRI. The MRI shows a solitary left clavicular lesion with marrow edema (upper images and image on the left). The lower images obtained 18 months after treatment show subtotal regression with remarkable reduction in the size of the clavicle.

The next step is typically a whole body MRI to look for other lesions in the body. Often other similar asymptomatic lesions are found (Fig. 1C). If the patient has multifocal lesions at presentation, in expert hands, the diagnosis of CNO can be made without a biopsy.

A whole body MRI also helps with follow-up (Fig. 1D) after treatment with intravenous pamidronate to check response to therapy. Clinically, once the patient becomes asymptomatic, it is assumed that the patient has responded to treatment.

There are some typical sites for CNO – distal radius, proximal tibia, clavicle (Fig. 2) and mandible. Lesions at these sites should raise a red flag for the diagnosis of CNO.

It is important to make sure that infection, infiltrative tumors and inflammatory arthropathies are not missed.

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