

INTERNATIONAL SKELETAL SOCIETY

OUTREACH PROGRAM

HUNGARY
June 19-20, 2018

INTERACTIVE SESSION OF HEMATOLOGICAL DISEASE

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CASE 1

A 6-year-old male patient reported pain on left knee for 3 months and a few low fever episodes.

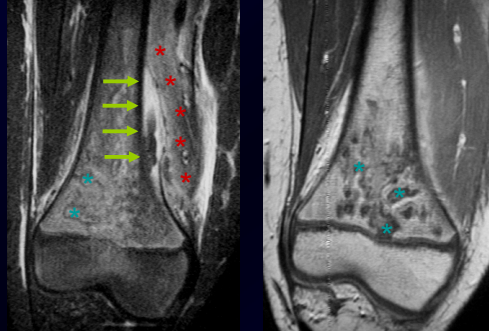


What is the correct diagnosis?

- a. Bone red marrow reconversion
- b. Lymphoma
- c. Leukemia
- d. Infection

Extensive soft tissue edema

Intra-osseous abscess

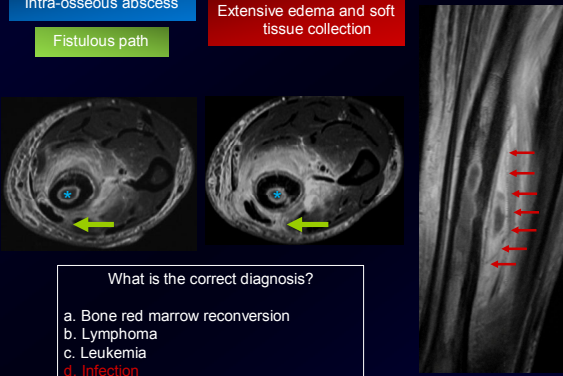


Soft tissue collection

Intra-osseous abscess

Fistulous path

Extensive edema and soft tissue collection

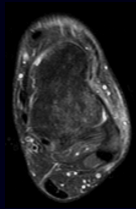
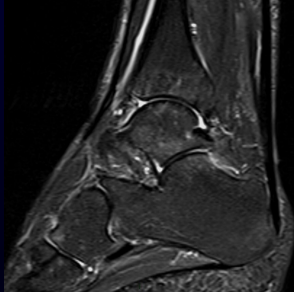


What is the correct diagnosis?

- a. Bone red marrow reconversion
- b. Lymphoma
- c. Leukemia
- d. Infection

CASE 2

A 28-year-old female patient, pain for 12 months on the right ankle.
No history of trauma.

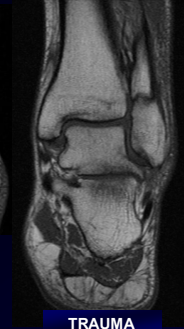
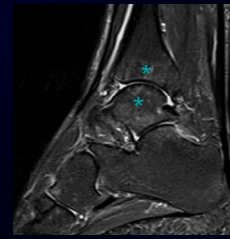
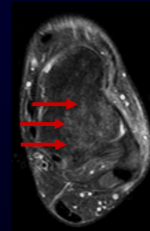


What is the correct diagnosis?

- a. Algodystrophy
- b. Bone red marrow hyperplasia
- c. Leukemia
- d. Infection

EPIPHYSIS

Mottled pattern or livedo reticularis pattern



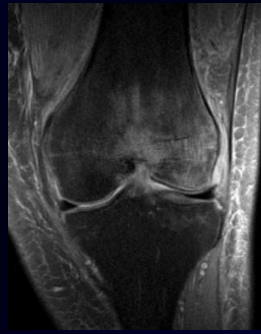
TRAUMA

What is the correct diagnosis?

- a. Algodystrophy
- b. Bone red marrow hyperplasia
- c. Leukemia
- d. Infection



REMNANT OR
HYPERPLASIA OF RED
BONE MARROW
Metaphysis



ALGODYSTROPHY
Epiphysis
Mottled pattern or livedo
reticularis pattern

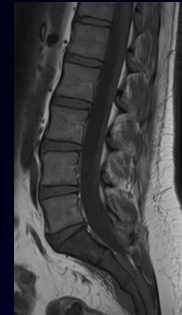
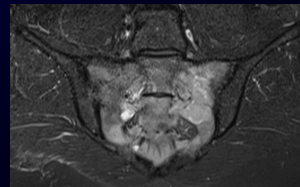


Mottled pattern or livedo reticularis pattern



CASE 3

A 38-year-old male patient, refers inflammatory gluteal pain for 4 months after trauma,
suspicion of sacral fracture



What is the correct diagnosis?

- a. Algodystrophy
- b. Bone red marrow hyperplasia
- c. Tumoral infiltration
- d. Infection

Tumoral bone marrow infiltration and soft tissue mass

Seemingly intact cortical bone

Restricted diffusion on the DWI and ADC map (high cellularity tumor)

What is the correct diagnosis?

- Algodystrophy
- Bone red marrow hyperplasia
- Tumoral infiltration**
- Infection

LYMPHOMA

Soft tissue mass and seemingly intact cortical bone

Important restricted diffusion on the DWI and ADC map (high cellularity tumor)

CASE 4

A 35-year-old male patient, hemophilia A, refers mild pain on right knee. No bleeding sensation in the past 7 years.

What is the correct diagnosis?

- Hemophilic arthropathy
- Pigmented villonodular synovitis
- Gout
- Tuberculosis

Synovial thickening

Low signal intensity on synovial proliferation on SWI or T2* weighted sequences

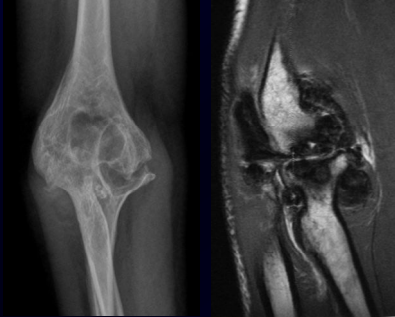
Normal epiphysis and absence of articular deformity

What is the correct diagnosis?

- Hemophilic arthropathy
- Pigmented villonodular synovitis**
- Gout
- Tuberculosis

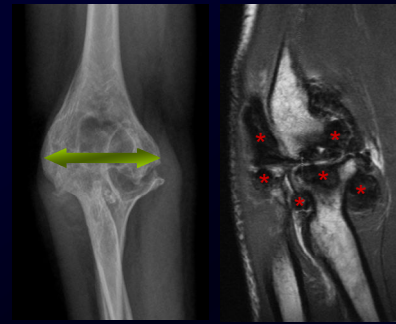
CASE 5

A 18-year-old male patient, hemophilia A, reported last bleeding for 5 months in the left knee. No bleeding sensation in the elbow.



What is the correct diagnosis?

- a. Hemophilic arthropathy
- b. Pigmented villonodular synovitis
- c. Gout
- d. Tuberculosis

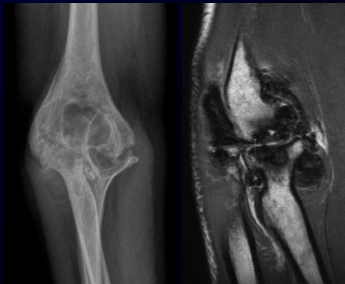


Low signal intensity on synovial proliferation on SWI or T2* weighted sequences

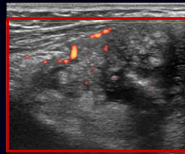
What is the correct diagnosis?

- a. Hemophilic arthropathy
- b. Pigmented villonodular synovitis
- c. Gout
- d. Tuberculosis

Hypertrophy of epiphyses
Well-defined marginal erosions
Joint space narrowing
Prominent subchondral cysts
Fragmentation and joint deformity



Is there recent bleeding and disease activity?



ULTRASONOGRAPHY

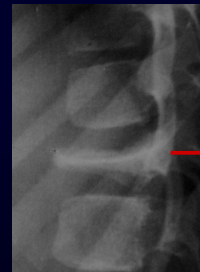
CASE 6

A 5-year-old female patient, reported pain for 6 months, not responsive to conservative treatment



What is the correct diagnosis?

- a. Sickle cell disease
- b. Leukemia
- c. Eosinophilic granuloma
- d. Infection



VERTEBRA PLANA

Langerhans cell histiocytosis = uncontrolled monoclonal proliferation of Langerhans cells (distinctive cells of monocyte-macrophage lineage)

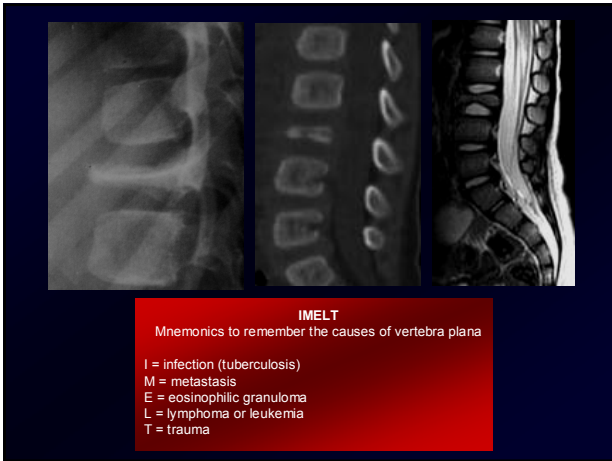
Most common cause of vertebra plana in children

Not fish-mouth or a H-shaped vertebrae



What is the correct diagnosis?

- a. Sickle cell disease
- b. Leukemia
- c. Eosinophilic granuloma
- d. Infection



Radiol med
DOI 10.1007/s11547-015-0600-7
PAEDIATRIC RADIOLOGY

Whole-body MRI in paediatric oncology
Rutger A. J. Nievelstein^{1,2} · Annemieke S. Littooji³

VERTEBRA PLANA

1. Collapse of a single vertebral body:
 - Ewing Sarcoma
 - Trauma
 - Osteomyelitis
 - Lymphoma or Leukemia
2. Collapse of multiple vertebral bodies:
 - Mucopolysaccharidosis
 - Eosinophilic granuloma
 - Multiple Myeloma
 - Osteogenesis imperfecta

Most common in thoracic spine
Usually in children 2-6 years old

CASE 7

A 6-year-old female patient, reported fatigue and muscular weakness for 3 years.

What is the correct diagnosis?

- Leukemia
- Lymphoma
- Osseous dysplasia
- CRMO

Increased diameter of both femurs

Diffuse bone marrow edema

Thickening and heterogeneity of the medial femoral cortex

BILATERAL AND SYMMETRICAL

METAPHYSIS AND EPIPHYSIS NOT INVOLVED

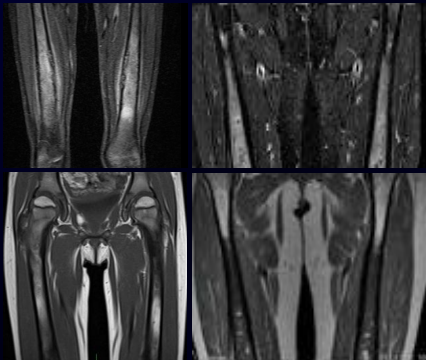
Camurati-Engelmann disease (CED)
Progressive diaphyseal dysplasia (PDD)

Camurati-Engelmann disease: review of the clinical, radiological, and molecular data of 24 families and implications for diagnosis and treatment

K. Janssens, F. Vanhoonaeker, M. Bonduello, L. Verbruggen, I. Van Maldergem, S. Raaij, N. Guistiabens, N. Migone, S. Wientroub, M. T. Divizia, C. Bergmann, C. Bennett, S. Simsek, S. Melançon, T. Cundy, W. Van Hul

Camurati-Engelmann disease: review of the clinical, radiological, and molecular data of 24 families and implications for diagnosis and treatment

K. Serrano, F. Verheulder, M. Bondelli, J. Verheulder, L. Van Meijdam, S. Balke, M. Gagliardi, D. Pignatelli, S. Wijnhoud, H. J. Christiaens, C. Bergmans, C. Serrano, S. Serrano, S. Malcomson, T. Condy, W. Van Halbeek

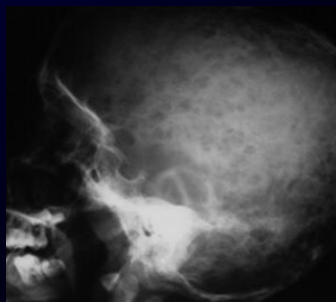


What is the correct diagnosis?

- a. Leukemia
- b. Lymphoma
- c. Osseous dysplasia
- d. CRMO

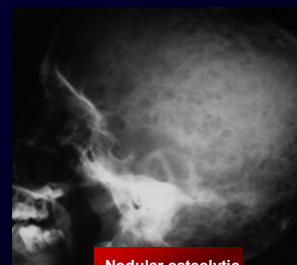
CASE 8

A 16-year-old male patient, reported fatigue and weight loss for 8 months. Actually, refers headache for 1 week.

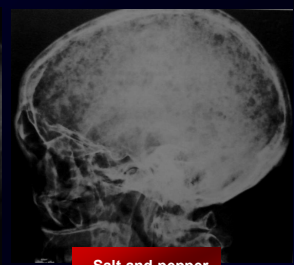


What is the correct diagnosis?

- a. Multiple Myeloma
- b. Leukemia
- c. Eosinophilic granuloma
- d. Infection

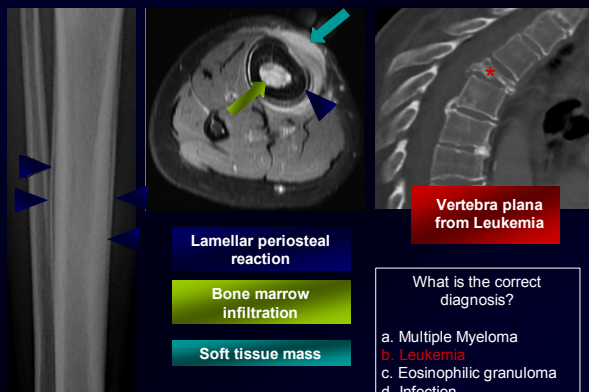


Nodular osteolytic lesions from Leukemia



Salt and pepper pattern from Multiple Myeloma

Difficult differential diagnosis
Patient age
Micronodular aspect of multiple myeloma



Vertebra plana from Leukemia

Lamellar periosteal reaction

Bone marrow infiltration

Soft tissue mass

What is the correct diagnosis?

- a. Multiple Myeloma
- b. Leukemia
- c. Eosinophilic granuloma
- d. Infection

CASE 9

A 54-year-old male patient, refers cervical pain and low fever for 6 months

What is the correct diagnosis?

- a. Multiple Myeloma
- b. Extramedullary hematopoiesis
- c. Lymphoma
- d. Infection



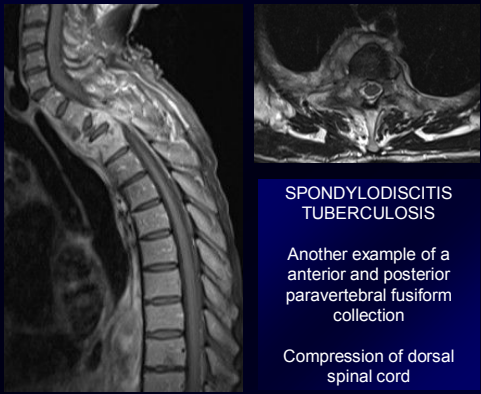
Paravertebral fusiform collection

Vertebral and discal destruction

SPONDYLODISCITIS
TUBERCULOSIS

What is the correct diagnosis?

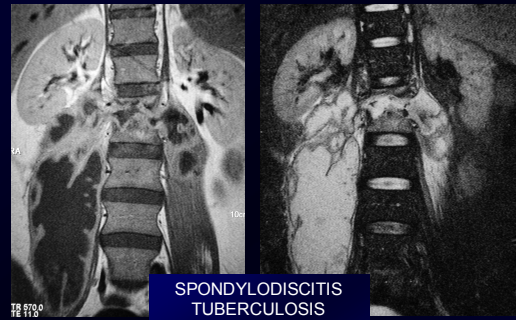
- a. Multiple Myeloma
- b. Extramedullary hematopoiesis
- c. Lymphoma
- d. Infection



SPONDYLODISCITIS
TUBERCULOSIS

Another example of a
anterior and posterior
paravertebral fusiform
collection

Compression of dorsal
spinal cord



SPONDYLODISCITIS
TUBERCULOSIS

Another example of a
paravertebral fusiform
collection associated with
psoas myositis

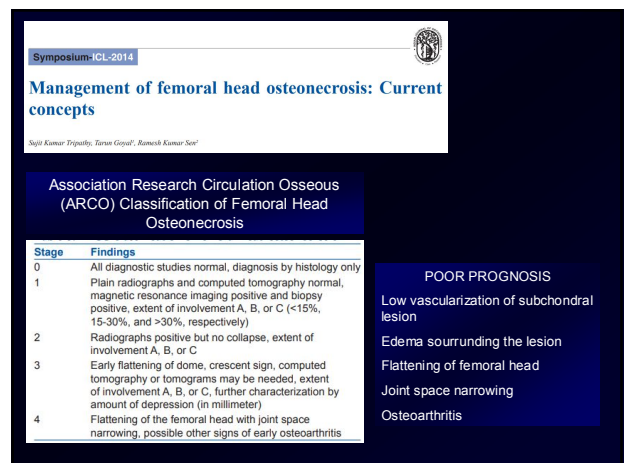
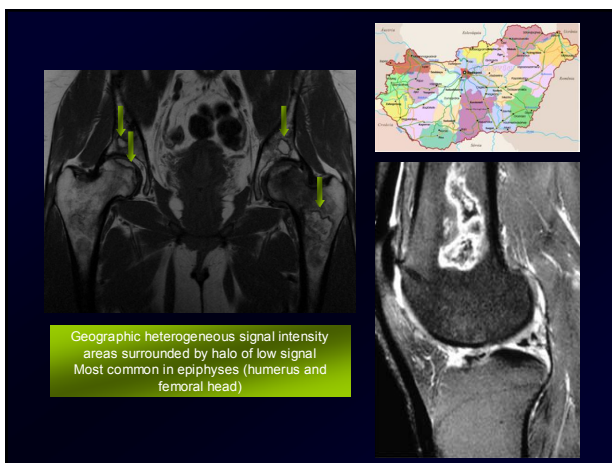
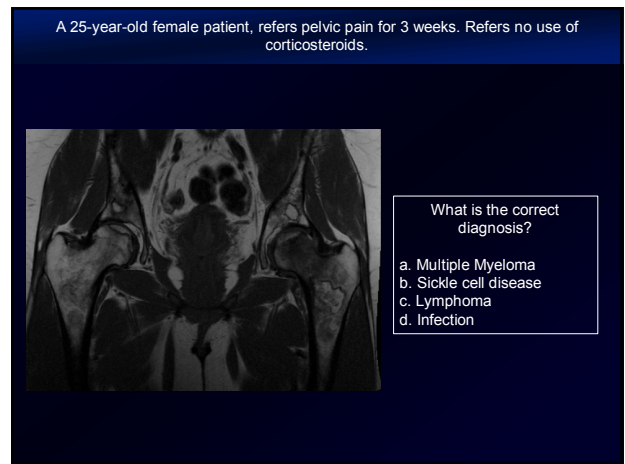
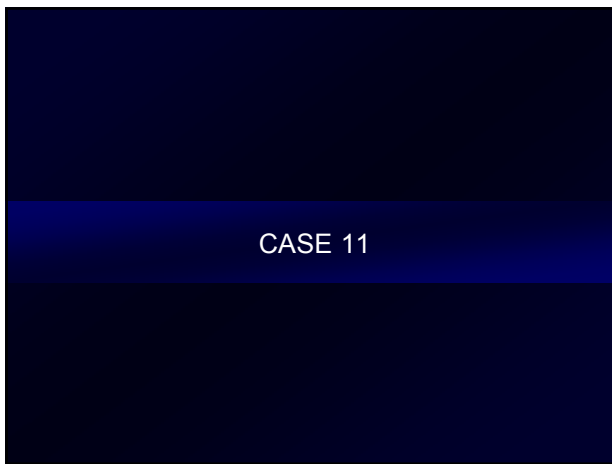
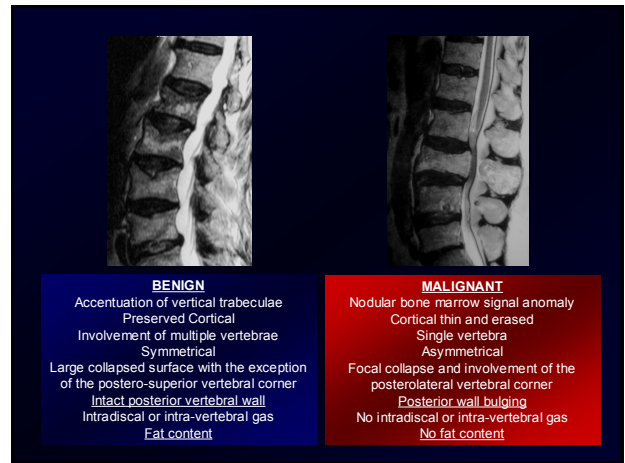
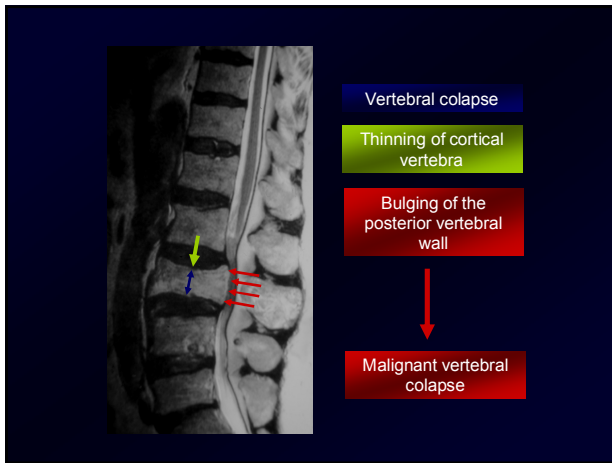
CASE 10

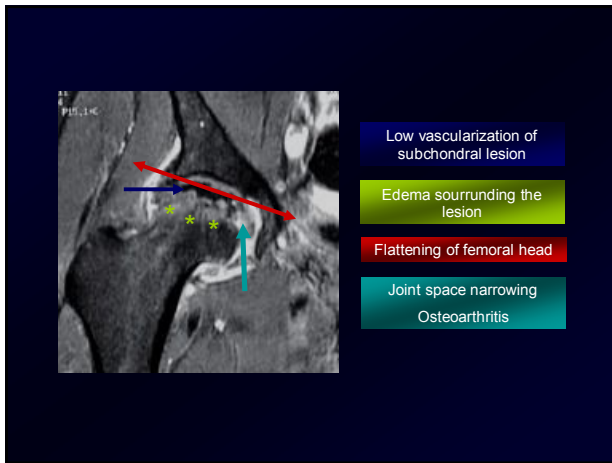
A 65-year-old male patient, refers inflammatory lombar pain for 6 months



What is the correct diagnosis?

- a. Metastasis
- b. Leukemia
- c. Eosinophilic granuloma
- d. Infection





Common etiologies of avascular necrosis of the femoral head

- Disordered lipid metabolism
 - Systemic steroid administration
 - Habitual alcohol use
 - Hyperlipidemia
 - Pancreatitis
- Interruption of arterial supply
 - Trauma: Fractures and dislocations of the hip
 - Iatrogenic: Following surgical intervention around hip
- Embolic
 - Gaucher's disease
 - Sickle cell disease
 - Dysbarism (caissons disease)
- Coagulation disorders (thrombotic)
 - Thalassemia
 - Polycythemia
 - Myeloproliferative disorders
 - Thrombotic and hypofibrinolytic states
 - Ionizing radiations
- Miscellaneous and multifactorial
 - Slipped capital femoral epiphyses
 - Legg Calve-Perthes disease
 - Congenital hip dislocation
 - Gout
 - Systemic lupus erythematosus
 - Rheumatoid arthritis
 - Organ transplantation
 - Pregnancy
 - Cytotoxic agents
 - HIV

What is the correct diagnosis?

- Multiple Myeloma
- Sickle cell disease
- Lymphoma
- Infection

CASE 12

A 45-year-old male patient, refers right knee pain for 4 months after trauma

What is the correct diagnosis?

- Algodystrophy
- Bone red marrow hyperplasia
- Tumoral infiltration
- Infection

Esclerotic permeative pattern

Tumoral bone marrow infiltration and soft tissue mass

Seemingly intact cortical bone

Primary Bone Lymphoma: Radiographic-MR Imaging Correlation

What is the correct diagnosis?

- Algodystrophy
- Bone red marrow hyperplasia
- Tumoral infiltration
- Infection

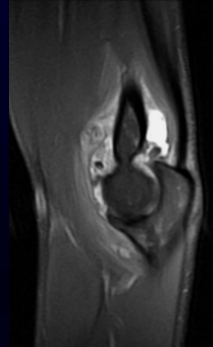
LYMPHOMA

Soft tissue mass and seemingly intact cortical bone

Important restricted diffusion on the DWI and ADC map (high cellularity tumor)

CASE 13

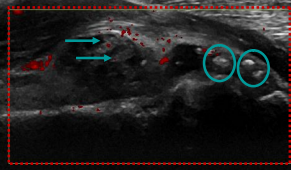
A 39-year-old male patient, pain and limited function during pronation of the forearm for 5 months.



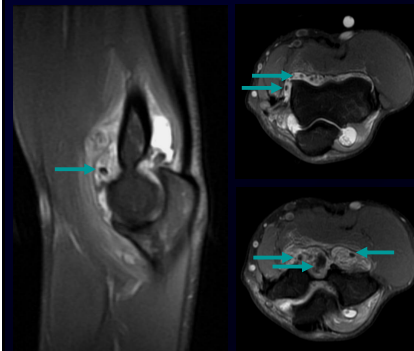
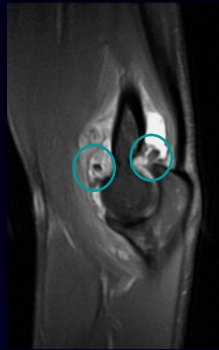
What is the correct diagnosis?

- a. Rheumatoid arthritis
- b. Haemophilic arthropathy
- c. Tumoral lesion
- d. Infection

CORONOID RECESS



SYNOVIAL PROLIFERATION
HYPERINTENSE BODIES

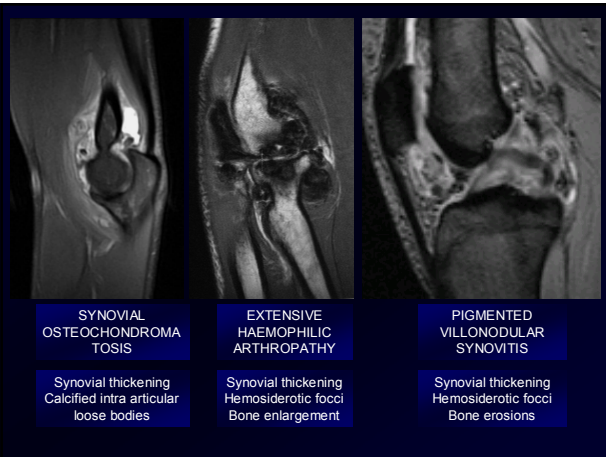


What is the correct diagnosis?

- a. Rheumatoid arthritis
- b. Osteoarthritis
- c. Tumoral lesion
- d. Infection

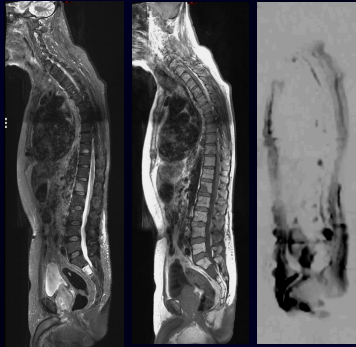
SYNOVIAL OSTEOCHONDROMATOSIS

CALCIFIED INTRA ARTICULAR LOOSE BODIES



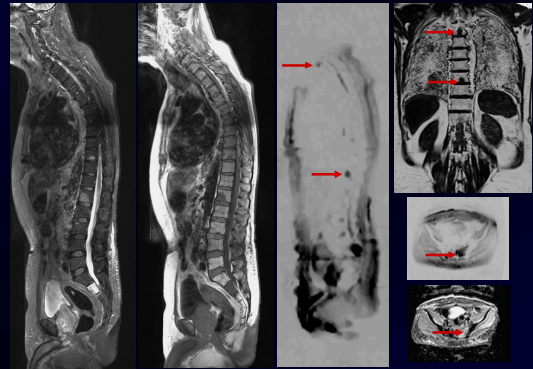
CASE 14

A 49-year-old male patient, diagnosis of MM classified as smoldering myeloma.
Follow-up WB-MRI.



Is this classification correct?

Bone lesion over 5 mm changes the classification of MGUS or "smoldering myeloma" to multiple myeloma



CASE 15

A 55-year-old male patient, refers inflammatory dorsal pain for 2 months



What is the correct diagnosis?

- a. Multiple Myeloma
- b. Spondyloarthritis
- c. Lymphoma
- d. Infection

IVORY VERTEBRA SIGN

Diffuse and homogeneous increase in density of a vertebral body



CAUSES

1. osteoblastic metastases (prostate and breast cancer)
2. lymphoma
3. tuberculous spondylitis (paravertebral fusiform collection)
4. Haemangioma (trabecular pattern)
5. Paget disease (vertebral body expansion and coarsened trabeculae)

What is the correct diagnosis?

- a. Multiple Myeloma
- b. Spondyloarthritis
- c. Lymphoma
- d. Infection

CDPI Clínica de Diagnóstico por Imagem

ALTA

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