

# Case 3

# Patient Profile

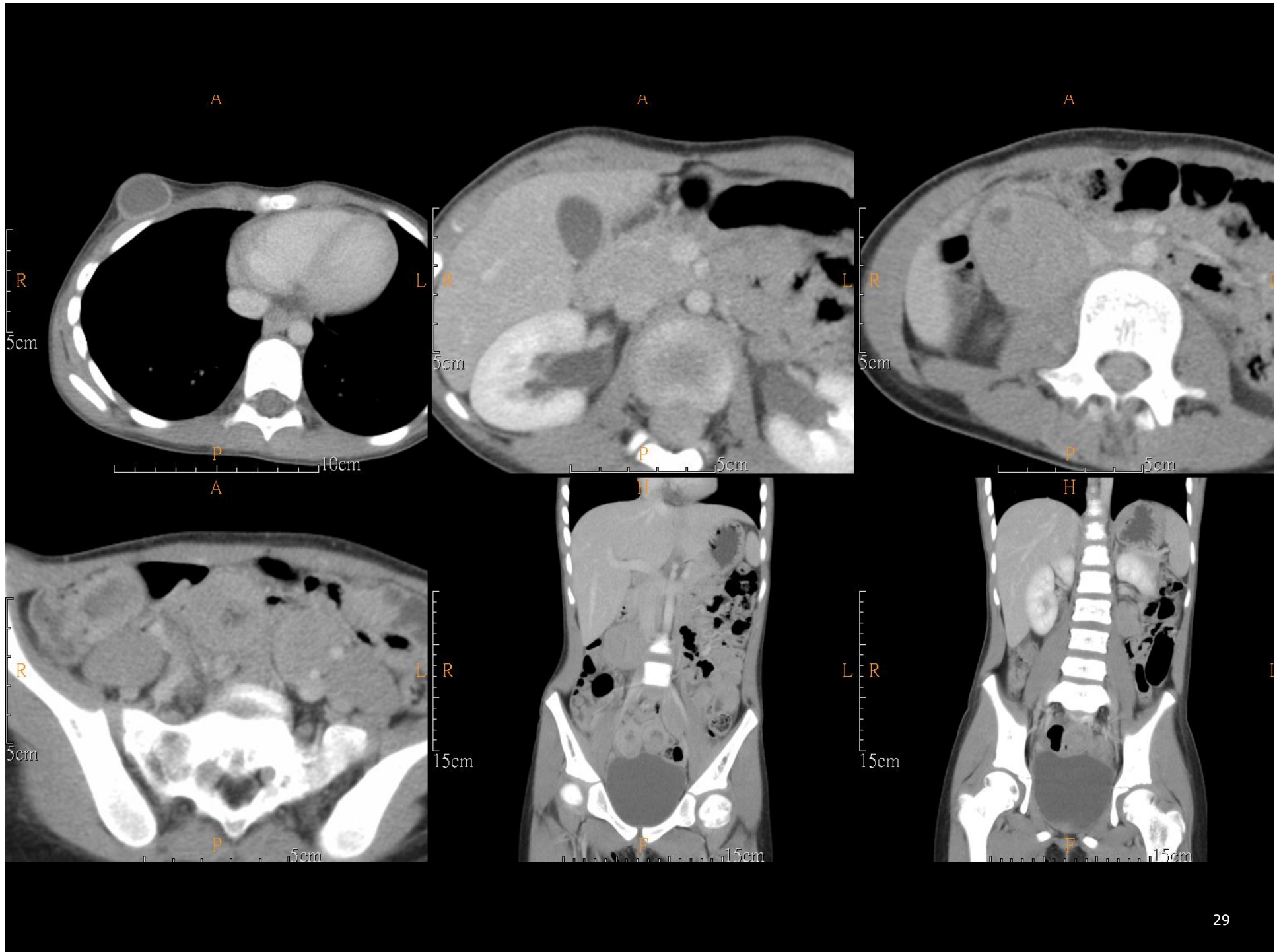
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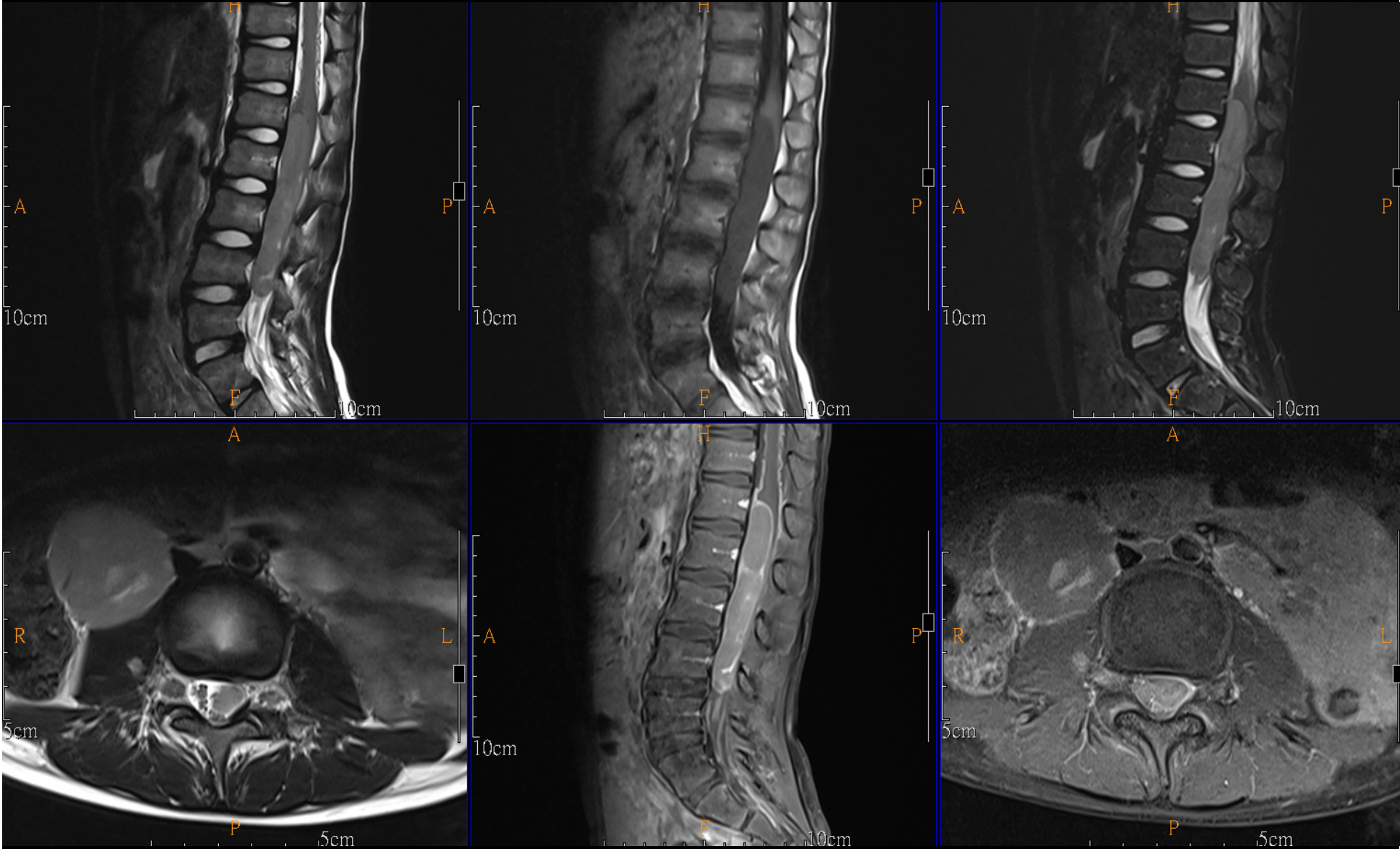
- 8 years old girl
- Chief complaint
  - Irritable sleep, back and lower limb pain for one month
- Past history
  - Mild limping gait for months

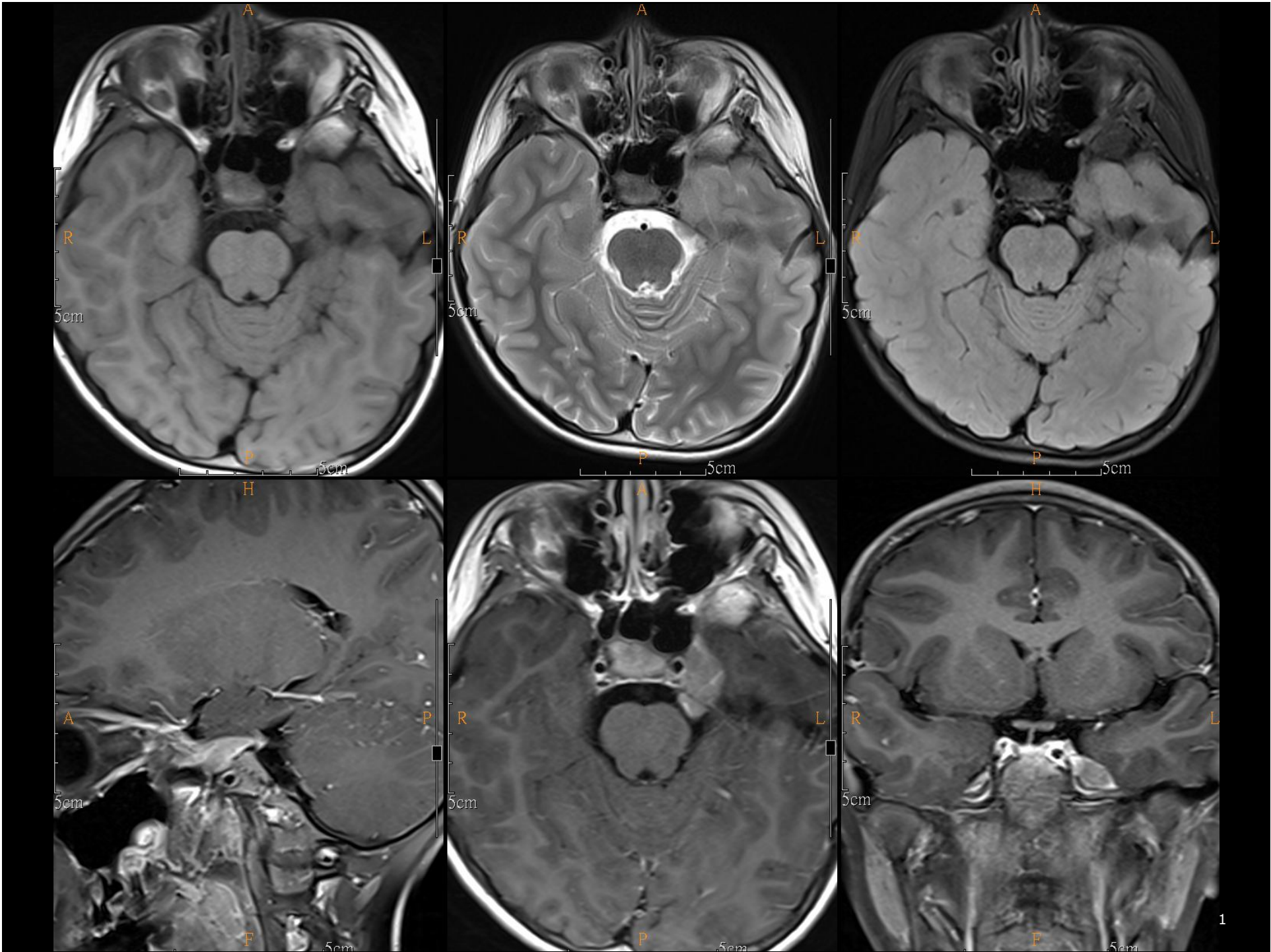
# Image

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- 2018-02-06 Chest and abdomen CT
- 2018-02-06 L-spine MRI
- 2018-02-06 Brain MRI







# Clinical Course

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- Underwent core needle biopsy of right breast
- Underwent laminotomies L1-4 and subtotal removal of tumor
- Pathology: myeloid sarcoma
- Diagnosis
  - Granulocytic sarcoma (Myeloid sarcoma), M6 lineage, extramedullary, aleukemic

# Granulocytic Sarcoma

- A solid tumor composed of immature WBC
- Rare neoplasm comprised of myeloid precursor cells
- Typically seen in children with ~60% occurring in individuals less than 15 years of age
- Pathology: immature myeloid elements, representing focal accumulation of leukaemic cells
- Typically extramedullary spinal tumor
- Common site involvement  
Skin, bone, skull, face, orbit, and paranasal sinuses



## MRI for Evaluation of Myeloid Sarcoma in Adults: A Single-Institution 10-Year Experience

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AJR 2012

**OBJECTIVE.** The purpose of this study was to evaluate the utilization and role of MRI in the management of myeloid sarcoma in adults.

**MATERIALS AND METHODS.** A retrospective study of 69 patients with pathologically proven myeloid sarcoma included 25 patients (16 men, nine women; mean age, 55 years; range, 22–78 years) who underwent pretreatment MRI at our institution from January 2001 to October 2011. A total of 71 MRI examinations were evaluated by two radiologists in consensus.

**RESULTS.** A total of 41 sites of involvement of myeloid sarcoma were noted, most commonly bone (13/25, 52%), muscle (7/25, 28%), CNS (6/25, 24%), and head and neck (6/25, 24%). Nineteen sites were noted on MR images obtained for evaluation of a new sign or symptom, most commonly musculoskeletal (11 sites) and CNS (six sites). Fifteen sites were

## Granulocytic Sarcoma of the Spine: MRI and Clinical Review

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AJR 2009

**OBJECTIVE.** Granulocytic sarcoma is a tumor formed by myeloid precursors at an extramedullary site. The purpose of this study was to evaluate the MRI findings and clinical manifestations in 32 cases of granulocytic sarcoma of the spine.

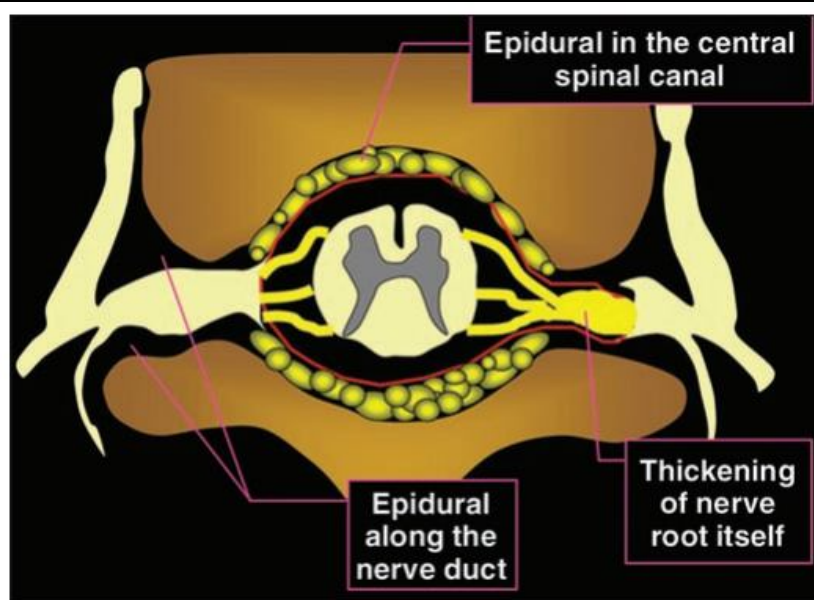
**MATERIALS AND METHODS.** Thirty-two patients (21 males, 11 females; mean age, 32 years) with myeloid leukemia and spinal granulocytic sarcoma were included in this study. All of the patients underwent radiotherapy with chemotherapy, and four patients underwent surgical decompression or excisional biopsy. All 32 patients underwent MRI of the spine; 21 patients underwent follow-up MRI.

**RESULTS.** Nine patients had spinal granulocytic sarcoma in the initial manifestation of

**TABLE 1: Distribution of Myeloid Sarcoma Lesions Detected on MR Images of 25 Patients**

Location	No. of Patients	%
Bone	13	52
Muscle	7	28
CNS	6	24
Head and neck <sup>a</sup>	6	24
Retroperitoneum	4	16
Pelvis	3	12
Liver	1	4
Mediastinum	1	4
Total	41	

<sup>a</sup>Excluding CNS.



**Fig. 1**—Diagram shows extramedullary locations of spinal granulocytic sarcoma: epidural in central spinal canal, epidural along nerve root course, and thickening of nerve root itself. Prevertebral lesion is not shown.

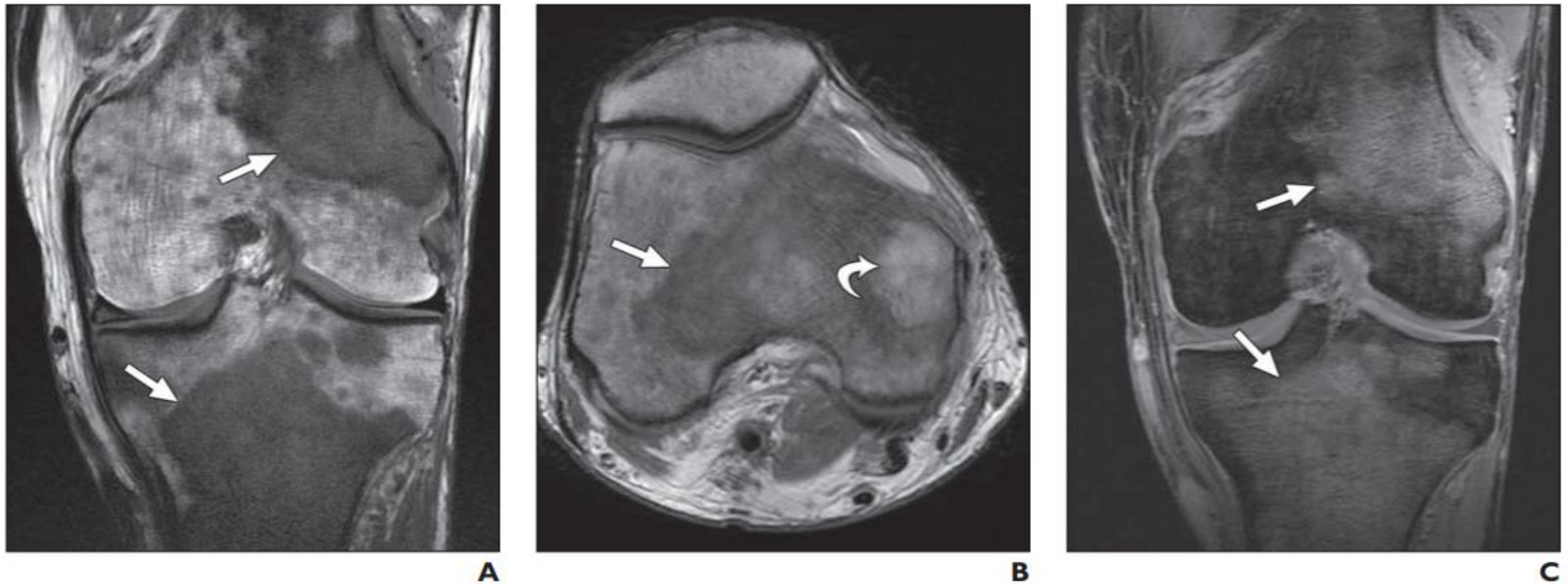
# Spine



**Fig. 2**—66-year-old man with 16-month history of acute myeloid leukemia who reported general weakness. **A–C**, T1-weighted spin-echo (TR/TE, 616/14) (**A**), T2-weighted fast spin-echo (4,050/94) (**B**), and contrast-enhanced T1-weighted spin-echo (500/9) (**C**) axial MR images show trilobulated epidural mass in right L2–L3 neural foramen with extension into paraspinal area, right back muscle, and spinal canal, resulting in left anterior displacement of thecal sac.

AJR Am J Roentgenol. 2010 Feb;194(2):485-9. doi: 10.2214/AJR.09.3086.

# Bone



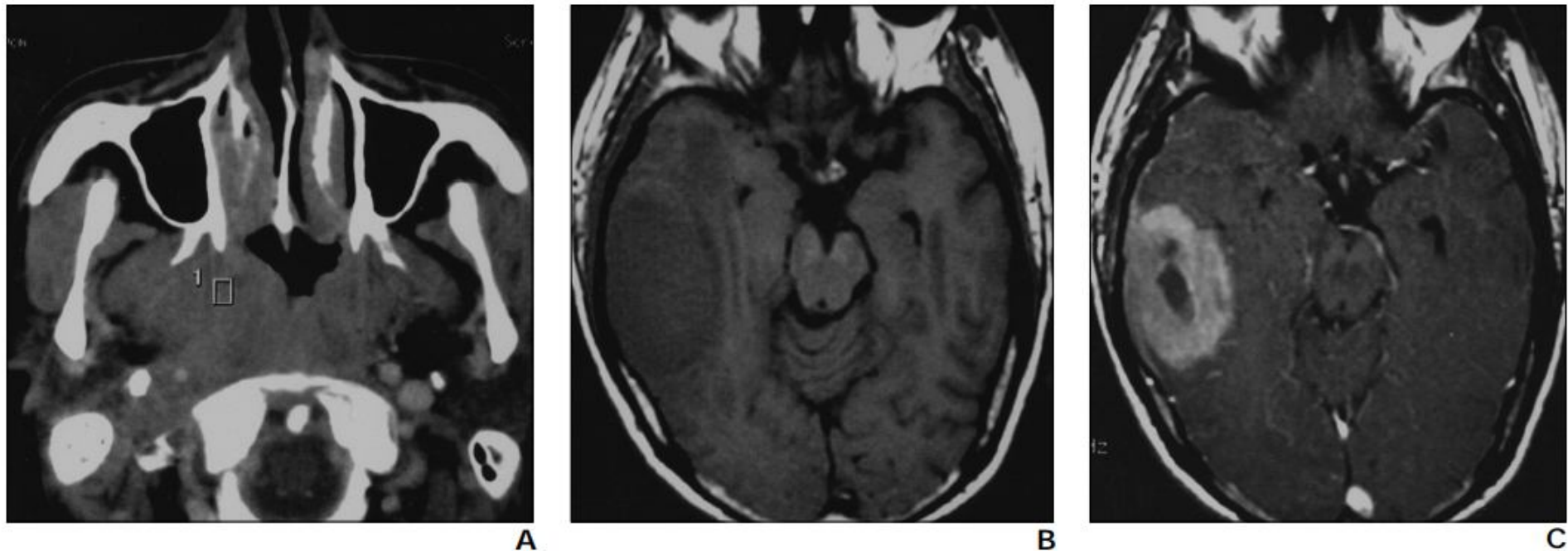
**Fig. 1**—45-year-old man with involvement of femur and tibia by myeloid sarcoma who originally presented with chronic myeloid leukemia.

**A**, Coronal T1-weighted MR image shows large lesions in distal femur and proximal tibia (*arrows*) and numerous other smaller lesions, which are isointense to hypointense compared with skeletal muscle.

**B**, Axial T2-weighted MR image through distal femur shows isointense to mildly hyperintense lesion (*straight arrow*). Lesion is heterogeneous with hyperintense area (*curved arrow*) at periphery.

**C**, Coronal fat-suppressed gadolinium-enhanced T1-weighted MR image shows mild homogeneous enhancement of larger lesions (*arrows*).

# CNS



**Fig. 2.**—32-year-old man with acute myeloid leukemia who had leukemic relapse in nasopharynx and was treated with local radiotherapy and chemotherapy. Patient presented 18 months later with headache and confusion.

**A,** Contrast-enhanced CT scan of nasopharynx shows soft-tissue mass (1) that is obliterating right fossa of Rosenmuller.

**B,** T1-weighted spin-echo MR image (TR/TE, 500/9) of brain shows mass isointense to gray matter in the right temporal lobe.

**C,** Contrast-enhanced T1-weighted spin-echo MR image (700/20) reveals thick, enhancing rim around mass. Mild vasogenic edema is noted with some mass effect.