OPEN

^{18}F-FDG PET/CT in Rhabdomyosarcoma of the Prostate in an Infant

Nina Schweighofer, MD, Martina Filipič, MD,† Nataša Marčun Varda, MD,† Anka Cuderman, MD,‡ Veronika Kloboves Prevodnik, MD,§ and Emina Talakić, MD‖*

Abstract: Rhabdomyosarcoma (RMS) of the prostate is a rare tumor in infants. RMS frequently arises in genitourinary tract (~20% of cases), with the embrional subtype being the most common.[1,2] The presenting symptoms are usually not specific, often leading to an extensive diagnostic work-up before identifying RMS.[3,4] Furthermore, there are no biomarkers specific to RMS. We present the case of a 4-month-old boy with postrenal acute kidney injury (AKI). Abdominal ultrasound and magnetic resonance imaging (MRI), followed by ultrasound-guided fine-needle aspiration biopsy and citopathological examination, established the diagnosis of prostatic RMS, which was later staged with ^{18}F-FDG PET/CT.[5]

Key Words: rhabdomyosarcoma, prostate, acute kidney injury, 18F-FDG PET/CT, infant, pediatric

(*Clin Nucl Med* 2026;51:137–140)

Received for publication October 24, 2025; accepted October 28, 2025.

From the Departments of *Radiology; †Pediatrics, University Medical Centre Maribor, Maribor; ‡Clinic for Nuclear Medicine, University Medical Centre Ljubljana; §Department of Cytopathology, Institute of Oncology Ljubljana, Ljubljana, Slovenia; and ‖Department of Radiology, Division of General Radiology, Medical University of Graz, Graz, Austria.

Conflicts of interest and sources of funding: none declared.

Correspondence to: Emina Talakić, MD, MBA, Department of Radiology, Division of General Radiology, Medical University of Graz, Auenbruggerplatz 9, 8036 Graz, Austria. E-mail: emina.talakic@medunigraz.at.

DOI: 10.1097/RLU.0000000000006248

ACKNOWLEDGMENTS

The authors thank the teams from the Departments of Radiology, Pediatrics, Nuclear Medicine, and Cytopathology at the University Medical Centre Maribor and the Institute of Oncology Ljubljana for their support and collaboration.

REFERENCES

1. Martin-Giacalone BA, Weinstein PA, Plon SE, et al. Pediatric rhabdomyosarcoma: epidemiology and genetic susceptibility. *J Clin Med*. 2021;10:2028.
2. Castle JT, Levy BE, Allison DB, et al. Pediatric rhabdomyosarcomas of the genitourinary tract. *Cancers*. 2023;15:2864.
3. Saltzman AF, Cost NG. Current treatment of pediatric bladder and prostate rhabdomyosarcoma. *Curr Urol Rep*. 2018;19:11.
4. McCarville MB, Spunt SL, Pappo AS. Rhabdomyosarcoma in pediatric patients. *AJR Am J Roentgenol*. 2001;176:1563–1569.
5. van Ewijk R, Schoot RA, Sparber-Sauer M, et al. European guideline for imaging in paediatric and adolescent rhabdomyosarcoma - joint statement by the European Paediatric Soft Tissue Sarcoma Study Group, the Cooperative Weichteilsarkom Studiengruppe and the Oncology Task Force of the European Society of Paediatric Radiology. *Pediatr Radiol*. 2021;51:1940–1951.
6. Gabrielson AT, Buchanan AF, Passoni N, et al. Pediatric urologic oncology series—bladder/prostate rhabdomyosarcoma. *Urology*. 2024;193:2–7.

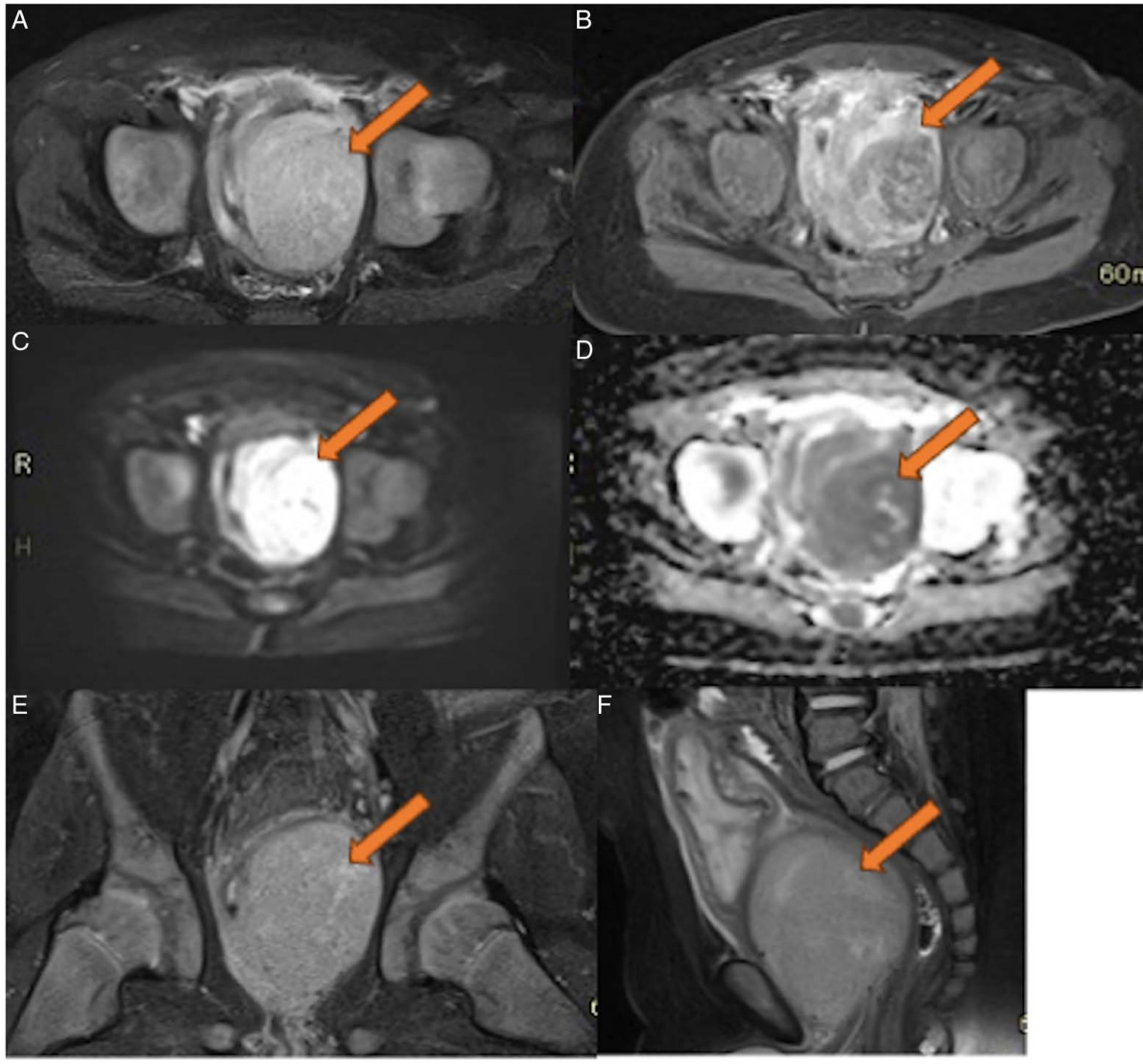

FIGURE 1. MR imaging of the abdomen with a gadolinium-based contrast agent reveals a large, well-circumscribed, heterogeneous, expansive mass located inferior and posterior to the urinary bladder. The lesion appears predominantly hyperintensive on T2-weighted sequences (**A, E, F**) and demonstrates partial enhancement after contrast administration, with a centrally less enhancing area likely corresponding to necrosis (**B**). On diffusion-weighted imaging (**C, D**), the lesion shows restricted diffusion with corresponding low signal intensity on the ADC map. The MR characteristics of the lesion are compatible with a malignant process. Considering the lesion and the fact that a normal prostate cannot be clearly visualized, the most probable diagnosis is a prostatic tumor, which was likely the cause of the postrenal AKI.

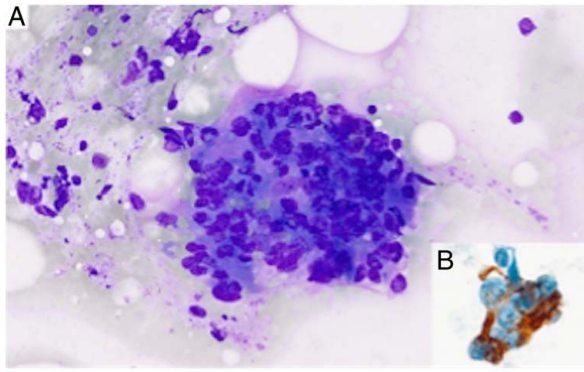

FIGURE 2. Cytopathological findings from the fine-needle aspiration biopsy of the prostatic tumor. **A**, Giemsa-stained smear showing a small, round blue cell tumor. The smear demonstrates low cellularity with few disorganized clusters of tumor cells characterized by scant basophilic cytoplasm, slightly degenerated oval to irregular hyperchromatic nuclei, finely granular chromatin, and absence of nucleoli. In some cells, basophilic cytoplasmic material was present, displacing the nucleus toward the periphery. **B**, Immunocytochemical staining reveals Desmin positivity in the cytoplasm of the tumor cells. The cytomorphologic features, together with Desmin immunoreactivity, were consistent with the diagnosis of rhabdomyosarcoma.

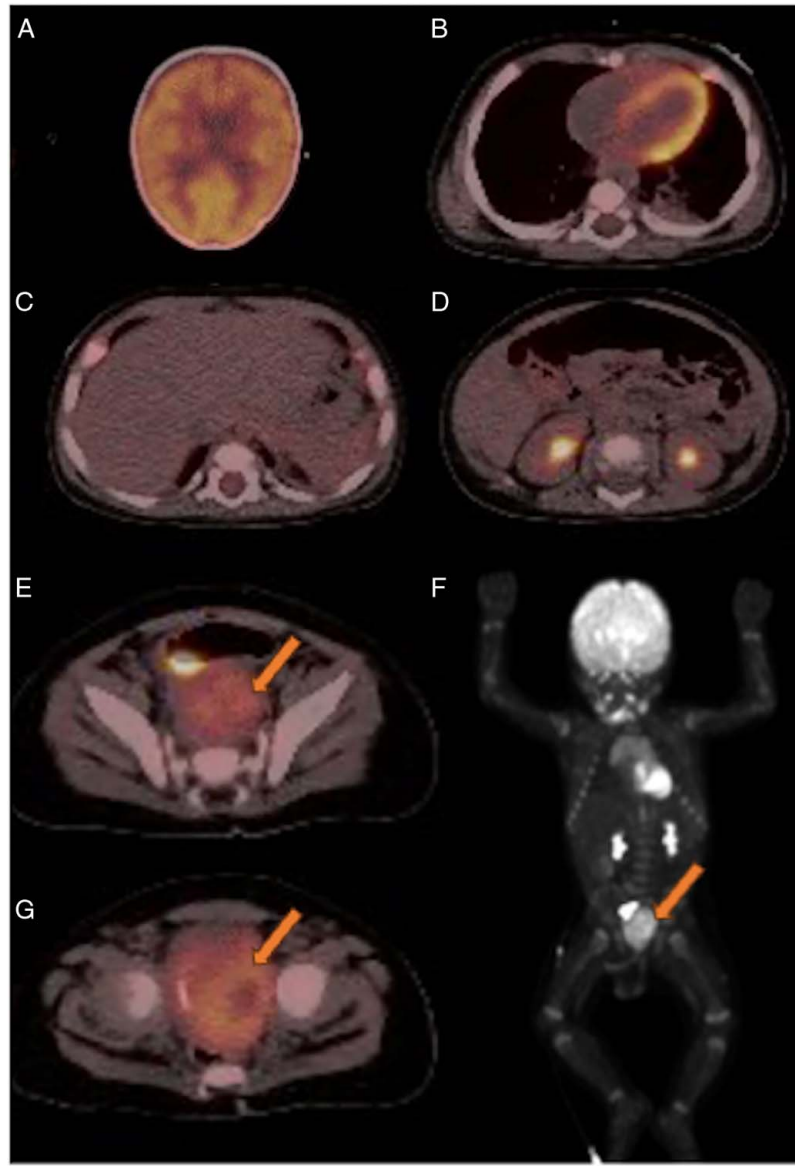

FIGURE 3. The patient underwent a full-body ^{18}F-FDG PET/CT for staging purposes. The MIP image (**F**) and fused axial images (**A–E, G**) demonstrated increased ^{18}F-FDG uptake (maximal SUV 5.3) in a large, expansive mass measuring ~3.5 ×4.5 cm, located dorsal and inferior to the urinary bladder. Intense activity representing radioactive urine is seen in a cranially displaced urinary bladder. No other pathological ^{18}F-FDG uptake was detected in the organs or lymph nodes. Histopathological analysis confirmed an embryonal-type rhabdomyosarcoma of the prostate without a fusion gene, no evidence of metastatic disease, and classified as standard-risk group C. This case illustrates the exceptional rarity of prostatic rhabdomyosarcoma in infants as a cause of postrenal AKI and underscores the value of ^{18}F-FDG PET/CT for staging distant metastatic disease, even in very young children, in accordance with the European guidelines for imaging in pediatric and adolescent rhabdomyosarcoma.[5,6]