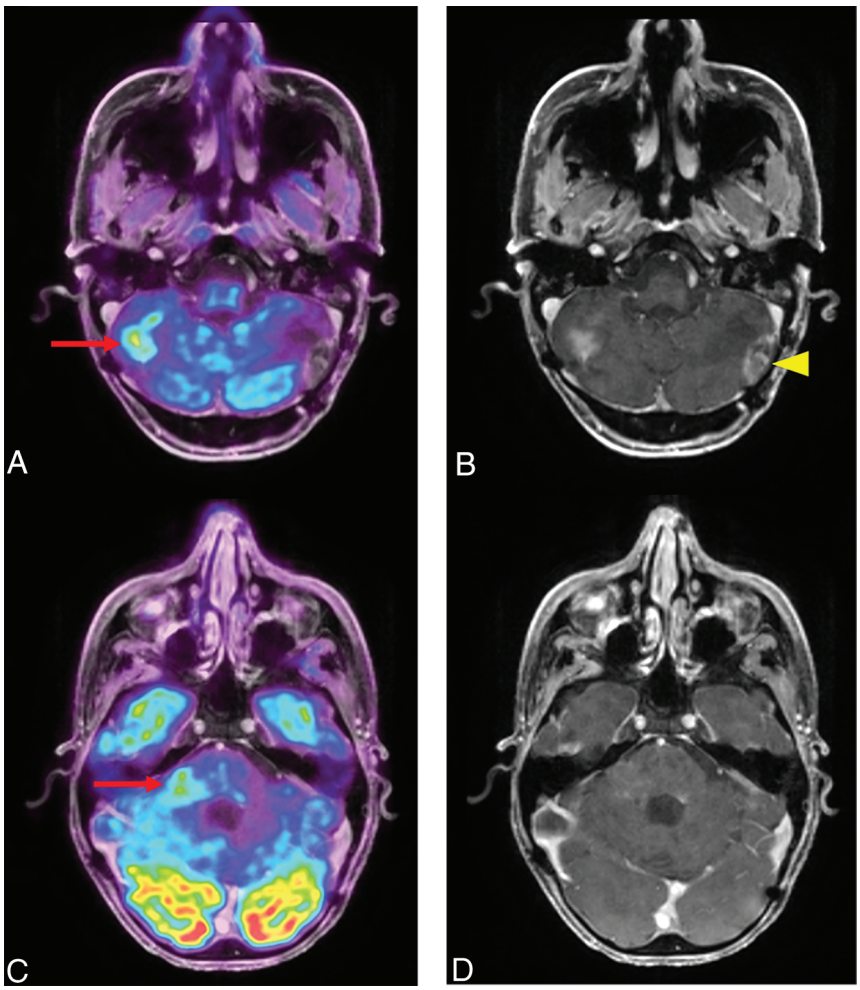
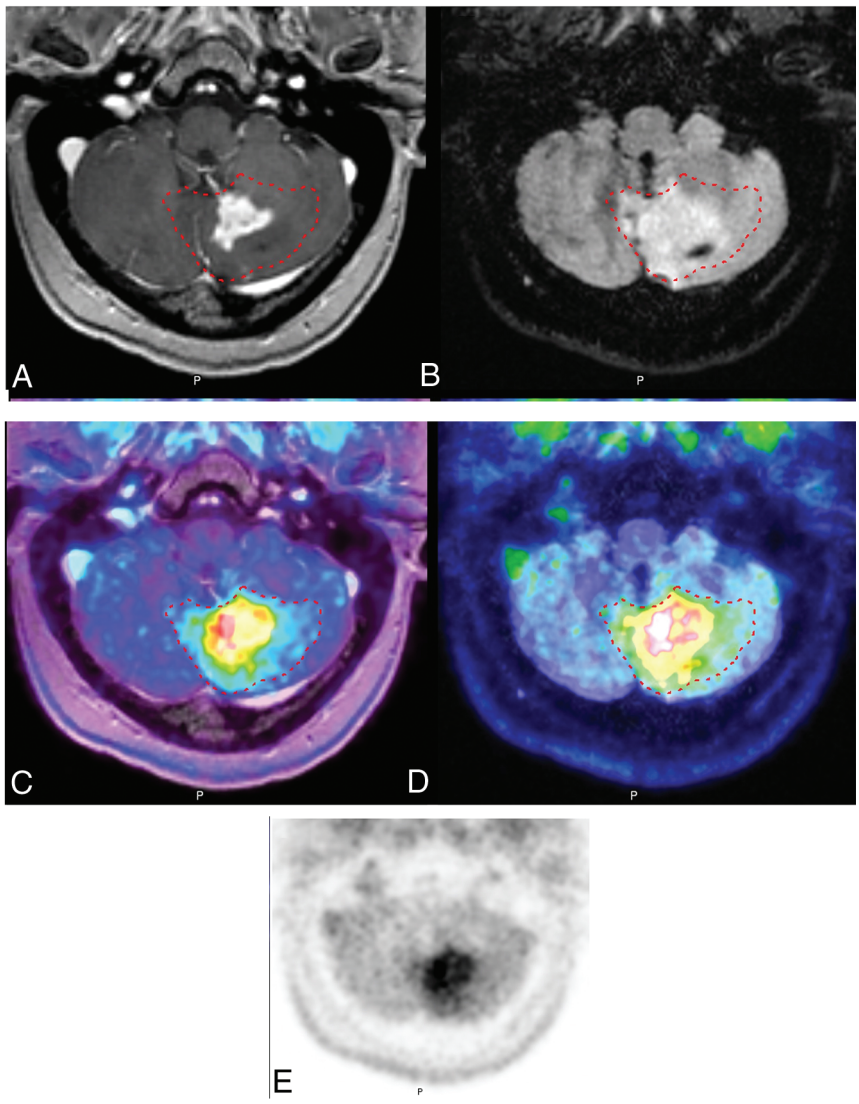


COLOR

SUPPLEMENTARY FIGURE 1. Selected FDG PET/MR images from a study performed in a 19-year-old man with medulloblastoma diagnosed at 6 years of age and previously treated with resection, craniospinal radiation, and chemotherapy, now with suspected recurrence. Fused FDG PET/MR images of the posterior fossa are shown in *A* and *C*, with corresponding T1 postcontrast MR imaging shown in *B* and *D*. Increased FDG uptake above that of normal white matter is observed in the right cerebellar hemisphere (*A* and *B*) and right middle cerebellar peduncle (*C* and *D*), highly suspicious for recurrent tumor (*red arrows*). FDG uptake less than the blood pool is observed in an enhancing lesion in the left cerebellar hemisphere (*yellow arrowhead*), most consistent with treatment effect.



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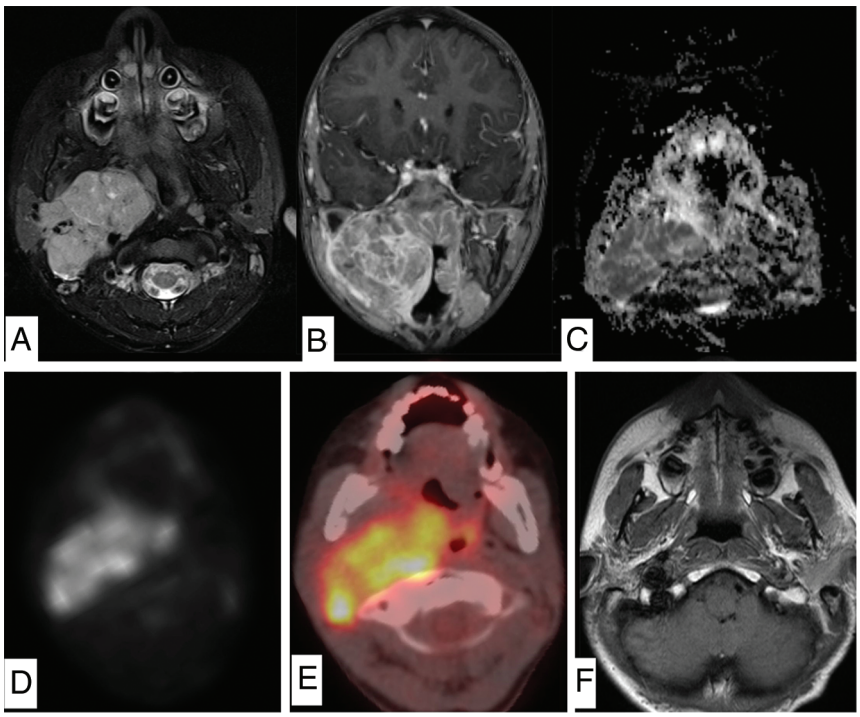
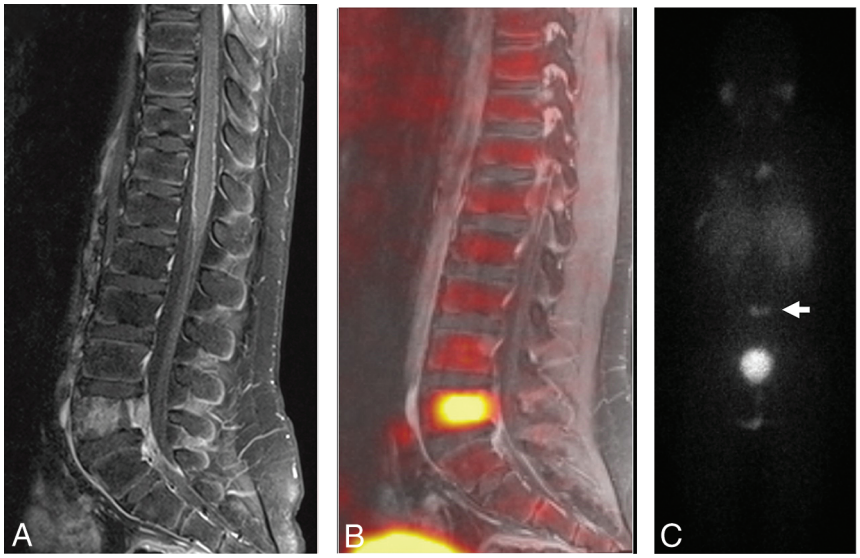
SUPPLEMENTARY FIGURE 2. Selected FET PET/MR images from a study performed in an 18-year-old woman with a new cerebellar mass after prior treatment for medulloblastoma. The mass demonstrates contrast enhancement (*A*) and FLAIR hyperintensity (*B*) with associated increased FET uptake on the corresponding fused FET PET/MR images (*C* and *D*, respectively) and the PET-only image (*E*). Note that the tumor volume defined by FET (*dashed red line*) using a 1.6 tumor-to-normal brain ratio threshold is larger than the enhancing portion of the mass (*A* and *C*) and similar to but not identical to the FLAIR hyperintensity (*B* and *D*). After resection, this mass was subsequently shown to be a glioblastoma.

COLOR



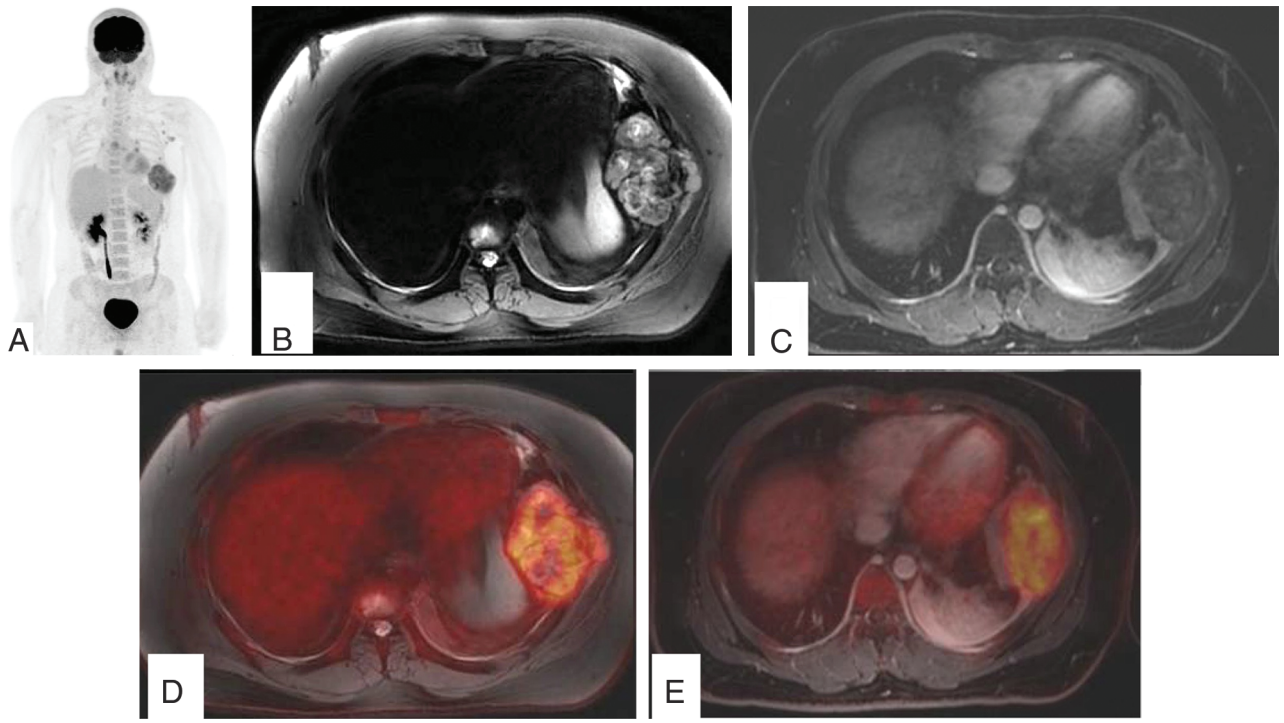
SUPPLEMENTARY FIGURE 3. Alveolar rhabdomyosarcoma in a 7-year-old child. A right parapharyngeal mass involves the carotid space, right parotid gland, and extends into the right pterygoid muscles (*A*) and demonstrates heterogeneous enhancement (*B*) and reduced diffusion (*C* and *D*). The mass demonstrates heterogeneous hypermetabolic activity on FDG PET, with an SUVmax of 7.0 (*E*). Following treatment with an operation and chemoradiotherapy, there is complete resolution of the lesion (*F*).

COLOR



SUPPLEMENTARY FIGURE 4. A 7-year-old child with neuroblastoma metastatic to the lumbar spine. Postcontrast T1-weighted image (*A*) demonstrates an enhancing lesion in the L5 vertebral body, with associated avid FDG uptake on sagittal fused [^{18}F] FDG PET/MR imaging (*B*). This osseous metastasis also demonstrates prominent uptake of MIBG on the ^{123}I MIBG planar scan (*C*).

AQ: I



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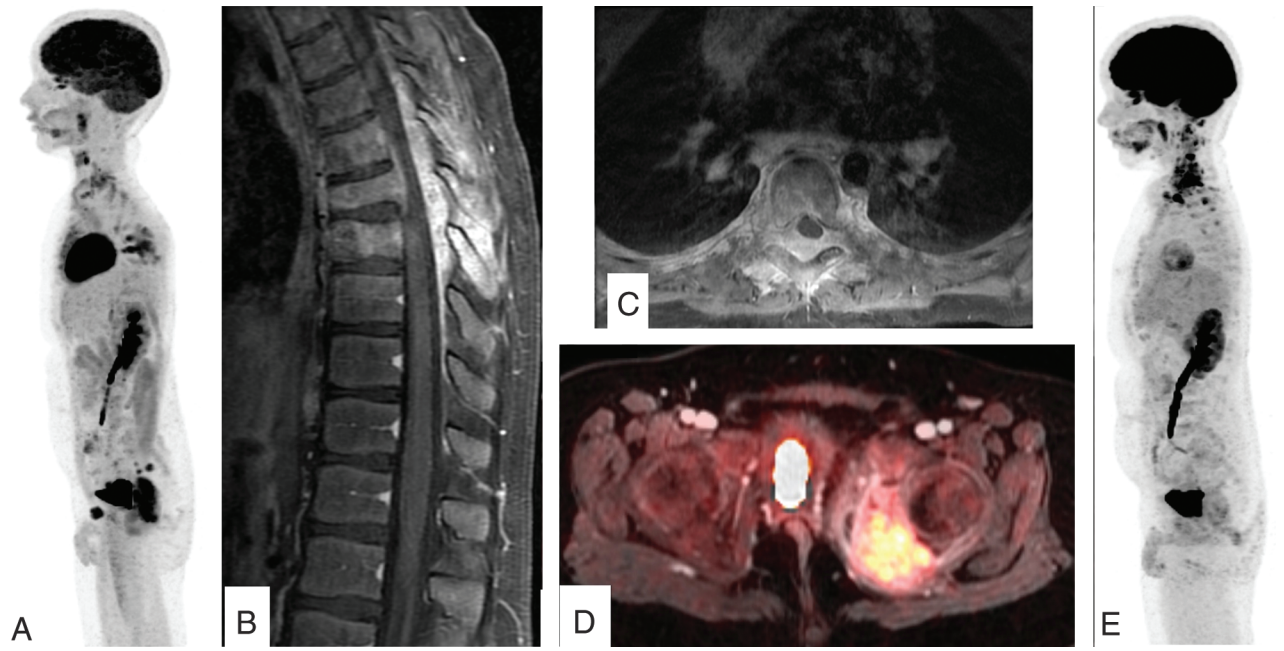
SUPPLEMENTARY FIGURE 5. A 16-year-old boy with an Askin tumor (Ewing Sarcoma Family type). MIP images from whole-body PET/MR imaging (*A*) demonstrate an FDG-avid left chest wall mass with adenopathy in the left axilla, left hilum, and mediastinum. Axial fat-suppressed postcontrast T1 (*B* and *C*) and axial fused FDG PET/MR images through the lesion (*D* and *E*) demonstrate heterogeneous internal architecture with accompanying hypermetabolic activity on FDG PET.



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SUPPLEMENTARY FIGURE 6. An 11-year-old boy with bone marrow biopsy–proved Hodgkin Lymphoma. Hypermetabolic activity is seen in the thoracic spine and bony pelvis on the MIP FDG PET image (*A*). Sagittal and axial contrast-enhanced fat-suppressed T1 images (*B* and *C*) show partial vertebral body collapse in several adjacent midthoracic vertebrae and an enhancing component in the posterior epidural space and posterior elements at these levels. A left bony pelvic lesion was hypermetabolic on FDG PET (*D*), with enhancement on MR imaging (not shown). FDG PET after treatment shows an excellent response with near-complete resolution of disease (*E*). Notice FDG-avid brown fat uptake in the neck.

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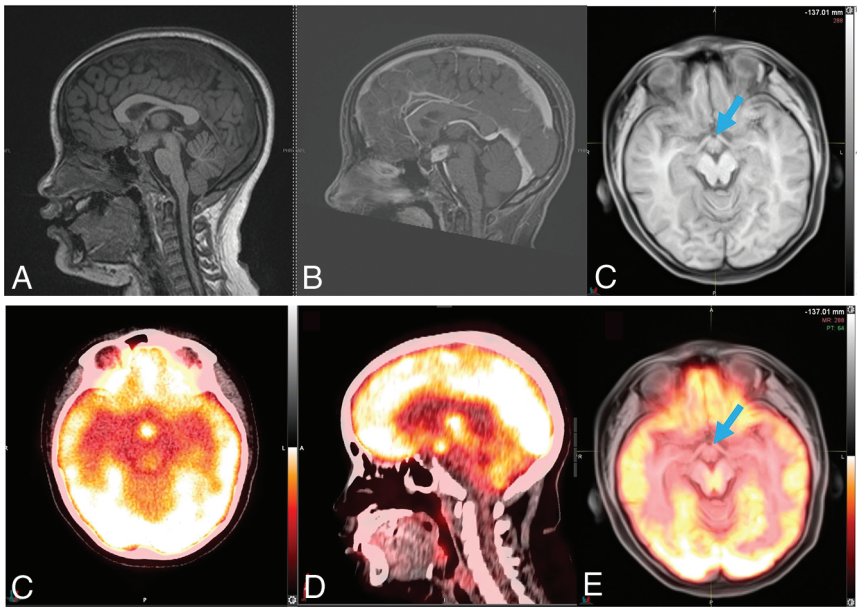

SUPPLEMENTARY FIGURE 7. A 9-year-old girl with intracranial LCH and no evidence of multisystem disease. Initial MR imaging of the brain demonstrates an enhancing suprasellar lesion (*A* and *B*, sagittal T1 pre- and postcontrast). There was corresponding avid FDG uptake associated with the lesion, SUVmax = 7.5 (*C* and *D*, axial and sagittal FDG PET/CT). The remainder of the whole-body PET had negative findings. The patient underwent therapy per the 2009 LCH guidelines with vinblastine and steroids. Follow-up whole-body FDG PET/MR imaging 4 months later demonstrates an interval decrease in the size and avidity of the lesion, with mild residual FDG uptake in the lesion, SUVmax = 5.1 (*E* and *F*, axial T1 and fused FDG PET/MR imaging).

AQ: J