Pediatr Radiol (2014) 44:1472–1474
DOI 10.1007/s00247-014-2989-x

LETTER TO THE EDITOR

Additional imaging features of intramuscular capillary-type hemangioma: the importance of ultrasound

Arnold C. Merrow · Anita Gupta · Denise M. Adams

Received: 14 February 2014 / Accepted: 30 March 2014 / Published online: 27 April 2014

Sir,

We would like to congratulate Yilmaz et al. [1] on their article "Intramuscular capillary-type hemangioma: radiologic-pathologic correlation." Their excellent imaging and histological description of this uncommon entity is important for separating out this unique vascular lesion from other vascular anomalies, the terminology of which has long been misapplied in the medical literature despite the seminal work of one of the authors more than 30 years ago [2].

We have recently had two cases of pathologically confirmed intramuscular capillary-type hemangioma (ICTH) evaluated in our department and would like to comment on the value of particular imaging findings in our cases that were best demonstrated by ultrasound. These findings were not discussed by the authors but appear to be represented in their figures [1].

In the first case, an 11-year-old boy with a remote history of palatal rhabdomyosarcoma presented to an outside hospital with a palpable left pelvic mass. Contrast-enhanced CT showed a heterogeneously hyperenhancing lesion infiltrating nearly the entirety of the left iliacus muscle (Fig. 1) and containing numerous prominent vessels; a fatty rim could be seen along portions of the lesion. Ultrasound (Fig. 1) similarly showed diffuse expansion of almost the entire length of the muscle with relative preservation of the muscle architecture, prominent vessels and lack of a discrete space-occupying mass.

In the second case, a 5-month-old girl presented to an outside hospital with a palpable bump in the left calf that was first noted at 2 weeks of life. The left leg had grown out of proportion to the right leg since that time, but the patient had no pain or functional problems. Ultrasound and MRI (Fig. 2) demonstrated an extensive abnormality of the gastrocnemius and soleus muscles through nearly their entire lengths. Both studies implicated a moderate amount of fat throughout the lesion with diffuse muscle expansion, relatively preserved muscle architecture and increased vascularity. Follow-up imaging during the next 2 years showed continued but proportionate growth of the lesion relative to the patient.

Most of these imaging findings, including localization within a single muscle or two adjacent muscles, intra- and perilesional fatty components and increased vascularity, were detailed by the authors [1]. However, additional striking features in our cases were the extent of

A. C. Merrow (✉)
Department of Radiology, Cincinnati Children's Hospital Medical Center,
3333 Burnet Avenue, MLC 5031,
Cincinnati, OH 45229, USA
e-mail: carl.merrow@cchmc.org

A. Gupta
Division of Pathology and Laboratory Medicine,
Department of Pediatrics,
Cincinnati Children's Hospital Medical Center,
Cincinnati, OH, USA

D. M. Adams
Hemangioma and Vascular Malformation Center,
Cancer and Blood Diseases Institute,
Department of Pediatrics,
Cincinnati Children's Hospital Medical Center,
Cincinnati, OH, USA

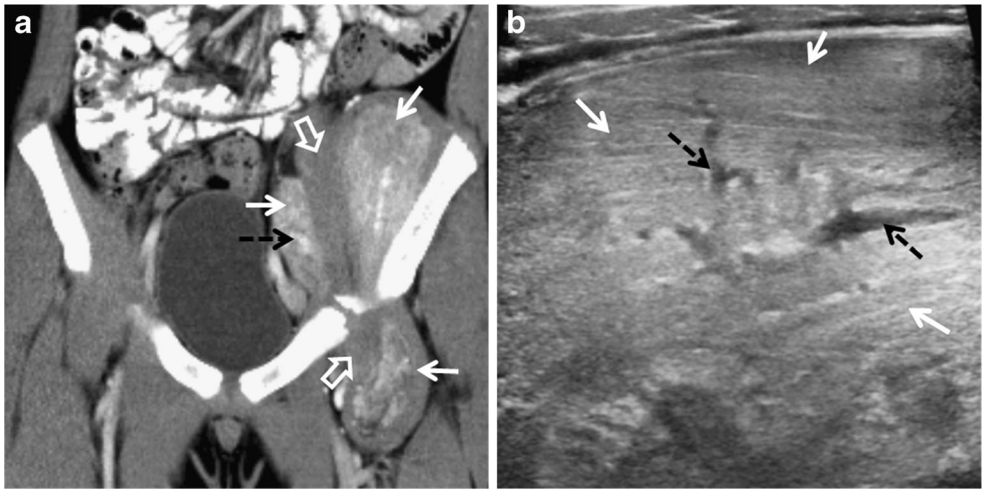

Fig. 1 Coronal contrast-enhanced CT (**a**) and longitudinal US (**b**) images through a left pelvic mass in an 11-year-old boy. The iliacus muscle (*solid arrows*) is diffusely infiltrated and expanded by an enhancing (**a**) and echogenic (**b**) lesion. Relative preservation of the underlying longitudinal muscle architecture is demonstrated sonographically (**b**). Numerous prominent vessels (*dashed arrows*) are present within the lesion. The adjacent psoas muscle (*open arrows*, **a**) is largely spared but is encased by the infiltrated iliacus muscle

involvement of nearly the entire lengths of the affected muscles with maintenance of the general muscular shapes (resulting in an overall expanded appearance) and relative preservation of underlying muscle architecture without a discrete space-occupying mass. This latter feature was most readily demonstrated on real-time sonographic sweeps through the involved muscles with parallel and perpendicular orientations of the transducers relative to the muscle long axes.

In the authors' paper, these features appear to be demonstrated by MRI in Figs. 3 and 4 and ultrasound in Fig. 2 [1]. We suspect that an additional sonographic view of the erector spinae muscles, perpendicular to the image provided by the authors in Fig. 1, would also show this pattern. This architectural preservation may be explained by one of the histological findings presented by the authors whereby "…lobules or sheets of capillaries…" were found "…separating individual or groups of skeletal muscle fibers" [1]. Our pathologist confirmed that, in our cases, the capillary and fatty components were infiltrating the affected muscles with lesion intermixed between muscle fibers.

In isolation, our presented features are not diagnostic for this particular entity. Other processes, such as denervation, focal myositis and trauma, could potentially cause a similar diffusely abnormal imaging appearance of a single muscle or adjacent muscles. However, a combination of the findings described by the authors and presented in our letter yields an appearance that is atypical of most benign and malignant pediatric soft-tissue masses and should raise the possibility of this particular lesion. MRI will demonstrate most of these

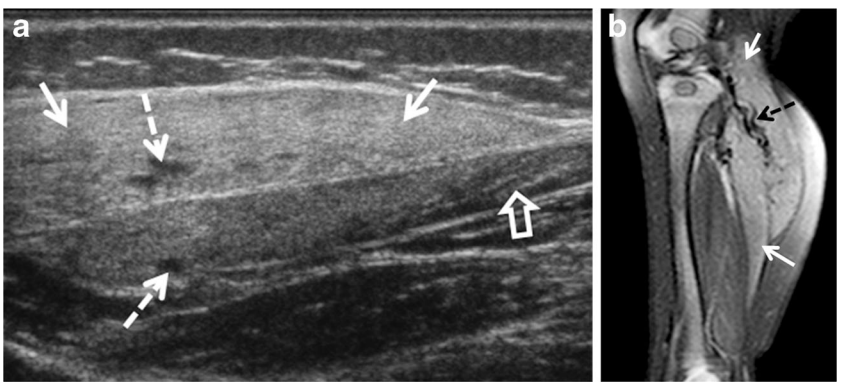

Fig. 2 Longitudinal US (**a**) and sagittal fat-suppressed T2-weighted MR (**b**) images through the lower leg of a 5-month-old girl. The majority of the gastrocnemius and soleus muscles (*solid arrows*) are infiltrated and expanded by an echogenic (**a**) and hyperintense (**b**) lesion. Relative preservation of the underlying longitudinal muscle architecture is demonstrated sonographically (**a**). Numerous prominent vessels (*dashed arrows*) are present within the lesion. Inferior portions of the soleus muscle (*open arrow*, **a**) appear spared

findings and should certainly be employed when the extent or depth of the lesion is unclear or the presence of certain components (such as fat) needs to be confirmed. However, the superior spatial resolution of US allows for the muscle architectural evaluation we believe is crucial to suggesting this entity.

We would like to invite the authors to review the ultrasounds and MRIs of their cases of ICTH to further support or refute the value of these additional imaging features in a larger case series.

Conflicts of interest None

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