Sir,

Cavernous hemangioma is a soft tissue benign tumor that is commonly found in head, neck, trunk, and limbs, but rarely involves the scrotum. A 19-year male came to our hospital and presented with an enlarged mass on the left scrotum. The mass was detected by the patient himself 7 years ago. No treatment was sought. It had enlarged accompanied with onset of mild pain in the past 3 months. On examination, extensive, lamellar lumps and bumps were noted on his left scrotum with no tenderness, redness or swelling (Figure 1A). There was no visible lesion in the genital or inguinal regions.

Ultrasound examination showed a thickened subcutaneous fatty layer and dartos in the left scrotum with abundant blood sinus signals in a grid-like pattern. The maximum inner diameter of blood sinus was 0.65 cm without clear boundaries with surrounding tissues (Figure 2). Color Doppler Flow Imaging (CDFI) detected an arterial and venous flow spectrum, which was intensified by adding pressure on the probe; and solid hypoechoic signals were noted in some blood sinuses (Figure 2).

During operation, a 9 x 5 x 2 cm neoplasm was noted invading into the scrotal dartos with thrombotic formation in some blood vessels. The tumor was successfully removed, and the postoperative pathological diagnosis confirmed cavernous hemangioma (Figure 1B).

Cavernous hemangioma is characterised by irregular grid or honeycomb-like hypoechoic lesion on ultrasonography, which has no envelope or clear boundaries with surrounding tissues. CDFI showed either a lack or an abundance of flow signals with persistent intermingled red-and-blue pattern; and occasionally a pulsatile arterial frequency spectrum was noted. Three types of ultrasonic images can be found on cavernous hemangioma: The first type mainly manifests as uneven solid hypoechoic foci; the second type mainly presents as honeycomb-like anechoic areas, and the third type presents as mixed cystic and solid echoes. Additionally, hyperechoic signals with acoustic shadowing could be noted in > 50% cases of cavernous hemangiomas. The patient presented here showed a mixed echo signals of multiple tortuous grid-like anechoic areas combined with solid low-echoes; therefore, most appropriately be classified as having a type 3 lesion. Currently, CT and MRI can be used as a fairly accurate modality to diagnose cavernous hemangiomas. CT is superior in displaying the presence of hemorrhage and calcification in the lesions, and phleboliths; MRI has the advantages of multi-parameter imaging, no ionizing radiation, and higher resolution in soft tissues. However, multiple repeated dynamic scanning is not possible for CT and MRI due to the high cost. Ultrasound examination not only provides information such as the shape, size, and inner structure of the lesions, but also observing the hemodynamics with the probe pressure test. The reported accuracy of ultrasound diagnosis for cavernous hemangioma is 91.7% with the sensitivity and specificity of 94.1% and 88.5%, respectively. High frequency color Doppler ultrasound is the preferred first-choice diagnostic modality for cavernous hemangioma.

Clinically, cavernous hemangioma can easily be misdiagnosed as cavernous lymphangioma, and as racemose hemangioma on ultrasound examination. Cavernous lymphangioma is marked on CDFI by multiple tiny anechos with clear boundaries. Few flow signals could be detected merely at the junction of the anechoic areas, which are not intensified by pressuring the probe.

Figure 1: The gross appearance and pathohistology of the mass. Figure A shows the gross appearance of the mass in the scrotum. Figure B shows that the mass was mainly composed of dilated thin-wall large blood vessels lined with flat endothelial cells, and the vessel cavities are filled with blood and thrombi under microscopic observation (HE, x 40).

Figure 2: The images of the mass on two-dimensional ultrasonography and Color Doppler Flow Imaging (CDFI). The image shows abundant blood sinus signals in a grid-like pattern, and the frequency spectra of arterial and venous flow were detected on CDFI. The right lower image shows a blood sinus with a diameter of 0.65 cm, and the asterisk shows the solid hypoechoic area within the blood sinus.
in this case showed abundant dotted or rod-like blood flow signals; and the signals were intensified by probe pressure test. Racemose hemangioma has arterio-venous fistula inside the lesions, therefore, mainly presents as cystic lesions with abundant blood flow signals. The flow signals could not be further intensified by pressing the probe, and the common finding of the high-speed and low-resistance artery blood flow spectrum in racemose hemangioma easily differentiates it from cavernous hemangioma as reported in the present case.

REFERENCES