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Primary great saphenous vein aneurysm in a five-year-old boy

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Abstract

Primary venous aneurysm is a very rare disease, especially in pediatric patients. A case of primary great saphenous vein aneurysm in a five-year-old boy is reported. He was initially suspected of suffering from inguinal hernia because the soft mass was detected at the inguinal region when the patient was in the standing position. However, ultrasonography revealed the swelling to be a great saphenous vein aneurysm. The lesion was restricted to the thigh area and was surgically excised.

Key Words: aneurysm, great saphenous vein
Primary venous aneurysm is a rare disease and may occur at any part of any vessel such as the jugular vein, forearm vein, femoral vein, and popliteal vein\textsuperscript{1,2}. Among those lesions, the great saphenous vein can also be affected although it is relatively rare\textsuperscript{3-9}. We report primary great saphenous vein aneurysm that occurred in a 5-year-old boy. Pediatric venous aneurysm is far more rare. Especially a great saphenous vein aneurysm has never been reported in pediatric patients according to our search of the English literature.
Case Report

A 5-year-old boy was referred to our institute for treatment of a soft mass in the right inguinal region. The mass became apparent when the patient maintained the standing position and it looked like an inguinal or femoral hernia (Figure 1-a). At the same time, dilatation of the superficial veins around the penis and scrotum was detected. Ultrasonography revealed that the mass was a blood vessel dilatation that connected to the right femoral vein (Figure 1-b, c). At the vessel junction between the femoral vein and the dilated abnormal vein, the venous valve did not work well and blood flow regurgitated when the patient maintained the standing position (Figure 1-c). Contrast-enhanced CT examination confirmed the lesion. We concluded that the lesion was a great saphenous vein aneurysm in a very restricted area at the thigh (about 5 cm long). In the aneurysm, no thrombus was detected but the blood flow was stagnant when the patient maintained the standing position. Surgical resection was performed. Some branches from the dilated vein were ligated (Figure 2-a) and the aneurysm was completely resected (Figure 2-b). The postoperative course was uneventful. Pathological examination of the resected aneurysm showed that smooth muscle of the vessel wall was irregularly arranged, partly thick and partly thin but showed no inflammation and degeneration. The distal part of the great saphenous vein did not dilate after the surgery, which was confirmed by ultrasound examination.
Discussion

Primary venous aneurysm is a rare vessel lesion, and vessels at various sites can be affected such as the internal jugular vein, superior vena cava, inferior vena cava, superior mesenteric vein, and veins of the extremities\textsuperscript{1,2}. The venous aneurysm sometimes causes a serious complication, i.e., pulmonary embolism if thrombus formation occurs in it\textsuperscript{3} and precise early diagnosis and proper treatment are necessary. Great saphenous vein aneurysm is rare and it can be seen at any level such as the thigh\textsuperscript{3-5,7,9}, popliteal area\textsuperscript{6}, and near the ankle\textsuperscript{8}. Furthermore, a pediatric case has never been reported as far as we searched the English literature. If the lesion occurs at the thigh, it is often misdiagnosed as an incarcerated femoral hernia in adults\textsuperscript{3,9}. However, ultrasonography (color Doppler scanning) could easily differentiate them and it is an important diagnostic modality in this disease.

The therapeutic options for primary venous aneurysm are: 1) resection without any reconstruction, and 2) resection and reconstruction by direct end-to-end anastomosis or graft interposition\textsuperscript{1,2}. If the lesion occurs in a vein that carries a main stream of blood flow such as the femoral vein or popliteal vein, venous reconstruction is necessary, but in the great saphenous vein simple complete resection may be one of the treatment strategies as in our case.

The exact etiology of primary venous aneurysm is not apparent. Some reports noted degenerative or inflammatory change of the venous wall, but there were many cases in which the exact etiology was not clear\textsuperscript{1,2}. In our patient, it was found that the venous valve did not work well at diagnosis but it is not clear whether such dysfunction was the cause of aneurysm or the result of venous dilatation. In our case, pathological examination of the aneurysm showed no apparent degenerative or inflammatory changes in the vessel wall but the smooth muscle of the vessel wall was irregularly arranged. Therefore, our results strongly suggested that the lesion was caused by a congenital wall anomaly of a restricted part of the vessel.
Conflict of interest statement

All authors have no conflict of interest.
References


Figure legends

Figure 1
a) Swelling in the right inguinal region became apparent when the patient maintained the standing position. The mass was soft and no pulsations were felt. Superficial venous dilatation at the penis and scrotum was also detected.
b) Ultrasonography detected prominent dilatation of the great saphenous vein. The area of the lesion was very restricted and the size of the dilatation was 5.0 X 1.7cm when the patient maintained the standing position. Thrombus formation was not detected.
c) Color Doppler scan. The aneurysm was connected to the femoral vein and Color Doppler scan showed blood flow regurgitation from the femoral vein to the aneurysm since the anti-regurgitation function of the venous valve was disturbed. Blood flow was turbulent in it when the patient maintained the standing position.

Figure 2
a) Operative view. An approximately 5 cm incision was made along the inguinal ligament and the aneurysm was dissected carefully. Inflow from some venous branches into the aneurysm was detected and they were all ligated and resected.
b) The whole view of the aneurysm. The aneurysm was irregularly-shaped. The aneurysm was completely resected.
Figure 1
Figure 2