CARDIOVASCULAR FLASHLIGHT

doi:10.1093/eurheartj/ehq417
Online publish-ahead-of-print 25 November 2010

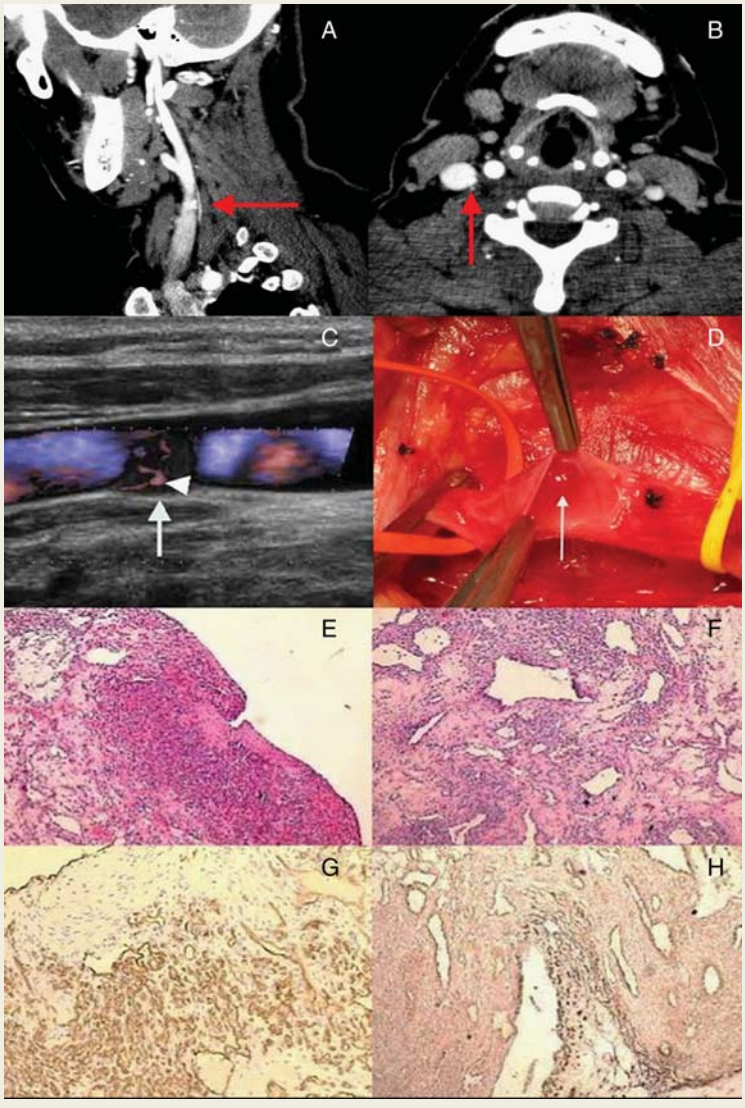
Pyogenic granuloma in the internal jugular vein

Zhangmin Wu†, Wei Cheng†, Sheng Wang, and Zhong Chen*

Department of Vascular Surgery, Beijing Anzhen Hospital, Capital Medical University, 2 Anzhen RD, Chaoyang District, Beijing 100029, China

* Corresponding author. Tel/Fax: +86 10 64456853, Email: chenzhong8658@vip.sina.com, chengwei_01@yahoo.com.cn
† Both authors contributed equally to this work.

A 38-year-old woman presented with a nodule within the right internal jugular vein by an ultrasonography for half a month. There were no subjective symptoms. She denied any history of trauma and infection. On physical examination, nothing special could be found on the right side of the neck and other parts of the body, and no abnormalities could be seen on the laboratory tests. The contrast computed tomographic scan indicated that there was a high-density nodule on the medial and posterior wall of the right internal jugular vein, the diameter of which was about 5.7 mm (*Panels A* and *B*). Another ultrasonography showed a well-defined nodular mass with abundant blood supply that involved the internal jugular vein (*Panel C*). The patient underwent surgical excision of a venous segment about 2 cm in diameter containing the neoplasm. It was observed to originate from the medial and posterior wall of the internal jugular vein, but no thrombus was found during the surgery (*Panel D*). Haematoxylin–eosin and immunohistochemical stainings were performed on formalin-fixed, paraffin-embedded tissue. The microscopic examination revealed a thin layer of smooth muscle cells under the endothelial cells of the neoplasm: in particular, a lobular proliferation of capillaries could be found (*Panel E*). The vessels of various canals within the nodule and the interstitial oedema were observed (*Panel F*). The immunohistochemical results showed that the endothelial cells of the capillaries were CD34-positive (*Panel G*) and the smooth muscle cells deriving from the veins were smooth muscle-specific actin-positive (*Panel H*). There were no atypical cells and sparse inflammatory cell infiltration could be seen. All above histopathological findings supported the diagnosis of intravenous pyogenic granuloma (IVPG).



Pyogenic granuloma (PG) is a common tumour-like lobulated lesion that typically arises on the skin and mucosa. Owing to its angiomatous nature and lack of intrinsic inflammation, PG is also called lobular capillary haemangioma and is considered to be non-neoplastic. Intravenous PG is one of the special, but rarely reported kinds of PG, which is mostly in the veins of the neck and upper extremities and usually appears in response to various stimuli such as a chronic low-grade local irritation, traumatic injury, or hormone factors. Although IVPG may appear in all ages, it is predominant in children and young adults, especially in females, possibly because of the vascular effects of female hormones.

The definitive diagnosis of IVPG should be made according to the histopathological examination, which shows a single, soft, polypoid mass that attaches to the luminal surface of the vein wall through a fibrovascular stalk or a broad basement. Usually, no thrombus, necrosis, or haemorrhage is noted. The microscopic examination of IVPG is similar to PG, but it differs from PG by no inflammatory cell infiltration in the oedematous stroma, in which the capillaries and venules are prominent to form a figure of numerous small and large channels engorged by red blood cells and lined by flattened or rounded endothelial cells that are mitotically active. The histological differential diagnosis of IVPG includes inflammatory granuloma, intravascular papillary endothelial hyperplasia, intravascular fasciitis, haemangiosarcoma, and an organized thrombus, which maybe helpful for further evaluation and management of the patient.

Like other PGs, IVPG is benign and demonstrates no tendency to spread within the bloodstream. Surgical excision is the main and preferred treatment. The complete local excision with a small portion of the vein should be done. After excision, recurrence may occur in some cases. This is believed to result from incomplete excision, failure to remove etiologic factors, or re-injury of the area. The follow-up of the patient at 1 year demonstrated no recurrence.

Panels A and *B*. Sagittal (*A*) and axial (*B*) views of the cervical contrast computed tomographic scan showing a high-density nodule (red arrows).

Panel C. Longitudinal colour Doppler imaging of the right internal jugular vein showed a moderately echogenic mass (white arrow) with abundant blood supply (arrowhead) and small hypoechogenic areas within it.

Panel D. Intraoperative picture showed a red neoplasm arising from the medial and posterior wall of the right internal jugular vein, with intact overlying envelope and broad basement (arrow).

Panel E. A thin layer of smooth muscle cells under the overlying epithelium; the capillaries were lined in a cluster pattern (haematoxylin–eosin, $\times 4$).

Panel F. A lobular proliferation of various capillaries, with some mature and enlarged venules, some of which were embedded in a fibromyxoid stroma, without obvious inflammatory cells infiltration (haematoxylin–eosin, $\times 4$).

Panel G. CD34-positive brown granules in the cytoplasma of the capillary endothelial cells were quite clear, and the vascular endothelial cells covering on the surface of the nodule (CD34, $\times 10$).

Panel H. Smooth muscle-specific actin-positive brown granules in the cytoplasm of the smooth cells arising from the vein wall (smooth muscle-specific actin, $\times 10$).