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ABSTRACT

The Benefits of Ultrasound in Resection of CNS Hemangioblastomas

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Introduction: CNS hemangioblastomas can be permanently cured by complete surgical removal. However, the vascular nature of these lesions and difficulties in localizing the tumors account for operative morbidity and recurrence. Color Doppler sonography has been proven useful during surgical removal of other vascular lesions.

Objective: In the present study we evaluate the usefulness of this technique for hemangioblastoma. We used the SonoWand Invite™ intraoperative navigation system in a consecutive series of hemangioblastomas operated at our institution. Patients with von Hippel-Lindau disease as well as sporadic hemangioblastomas were included. Results: The system was used on n= 64 consecutive hemangioblastomas operated at our institution from 2007 to 2009. The tumors were localized in the cerebellum (n=26), spinal cord (n=27), brainstem (n=10) and supratentorial (n=1). In n=53 cases the patients were diagnosed with VHL disease and germline mutations of the VHL tumor suppressor gene were identified in 98%. Average tumor size was 1,782 mm3 and 45% of the tumors were cystic. 42/64 tumors could be localized by grayscale sonography. All tumors were visible on color Doppler sonography. However, in 40 cases, only the pathologic vessels and not the solid tumor itself enhanced on color Doppler. Postoperative MRI follow-up revealed recidive tumors in 5 cases.Three of these had had diffuse hemangioblastomatosis and one was a spinal nerve tumor.

Conclusions: Color Doppler sonography is a sensitive intraoperative tool to guide the surgical approach and resection and provides reliable resection control in surgery of CNS hemangioblastoma.