

Section: Intraoperative Bildgebung

ID: 153

Abstract-Title:

ULTRASOUND IN NEUROSURGERY AND ITS NEW APPLICATIONS - ANALYSIS OF 1022 EXAMINATIONS

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Abstract-Text:

Neurosurgery has the privilege to benefit from long time experience and evolution of techniques of many neighbour disciplines using ultrasound since several decades. The purpose of this study is to present our routine use of high-end ultrasound technique in neurosurgery. Moreover we present a new technique we introduced into neurosurgery: trans-endoscopic ultrasound for simple navigation and intra-operatively imaging in neuro-endoscopy.

The ALOKA 5000 with four small probes offered a basis to improve minimally invasiveness in our discipline: TCD probe (2.14 – 3.75 MHZ) was used in 616 cases mainly at ICU; the small part sector probe (3.8 – 7.5 MHZ) was mainly applied intra-operatively in 209 cases and the burr hole probe (3.75 – 7.5 MHZ) was also mainly used intra-operatively in 94 cases. The trans-endoscopic mini-probe (360°, 6F + 8F, 10-15-20 MHZ) was used with strictly indication in 75 cases (24 cases high-end). In the initial 31 intra-operative cases an old b-mode machine was used.

The complete spectrum of neurosurgical diagnoses presented applicable assistance for therapy in our experience. In 376 intra-operative applications ultrasound proved to be an excellent neuro - navigation system providing the surgeon with real-time imaging and targeting capabilities. Resection control in 221 tumor cases with targeting in 29 small lesions was very satisfying and in four cases craniotomy correction was possible before opening of dura mater. Compensation of computer-navigation failures was possible in 14 cases preventing possible disasters.

The 584 cases of application at the ICU showed a bedside use, resulting in decrease of risky out door examination reduce stress for our patients and logistic efforts for the professionals. Investigations are running in innovative applications like: brain death diagnosis (54 cases), bedside-sono-CT (92 cases), aneurysm- monitoring (50 cases), bridging-vein monitoring (15 cases), sono-pupillometry (23 cases). Intra-operatively we examine sono-angiography in tumors and for clipping control of aneurysms, compensate computer-navigation pitfalls and we navigate endoscopes with our "brain-radar".

Looking to the literature and basis research in ultrasound we have to compet the fact, that ultrasound will be one the future pathways of neurosurgery.

Bild 1/JPG

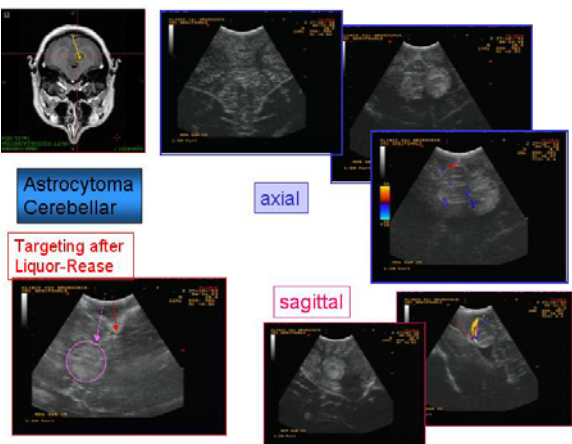


Bild 2/JPG

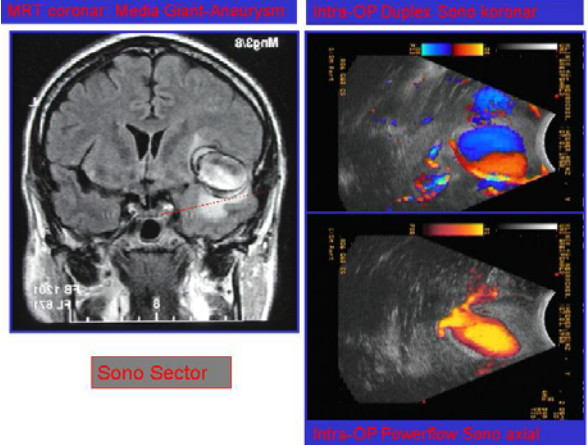


Bild 3/JPG

