curac2004
3. Jahrestagung der Deutschen Gesellschaft für Computer- und Roboterassistierte Chirurgie e.V.

Anwendung von intraoperativem Ultraschall bei intramedullären Tumoren mit Darstellung der Gefässtopographie

Intraoperative ultrasound for intramedullary tumors and their relation to the anterior and dorsal spinal arteries

Boris Krischek[1], Ulrich Sure[2], Dirk Michael Schulte[2], Wuttipong Tirakotai[2], Ludwig Benes[2], Helmut Bertalanffy[2]

[1]Klinik für Neurochirurgie, Philipps-Universität Marburg
[2]Klinik für Neurochirurgie, Philipps-Universität Marburg

Purpose

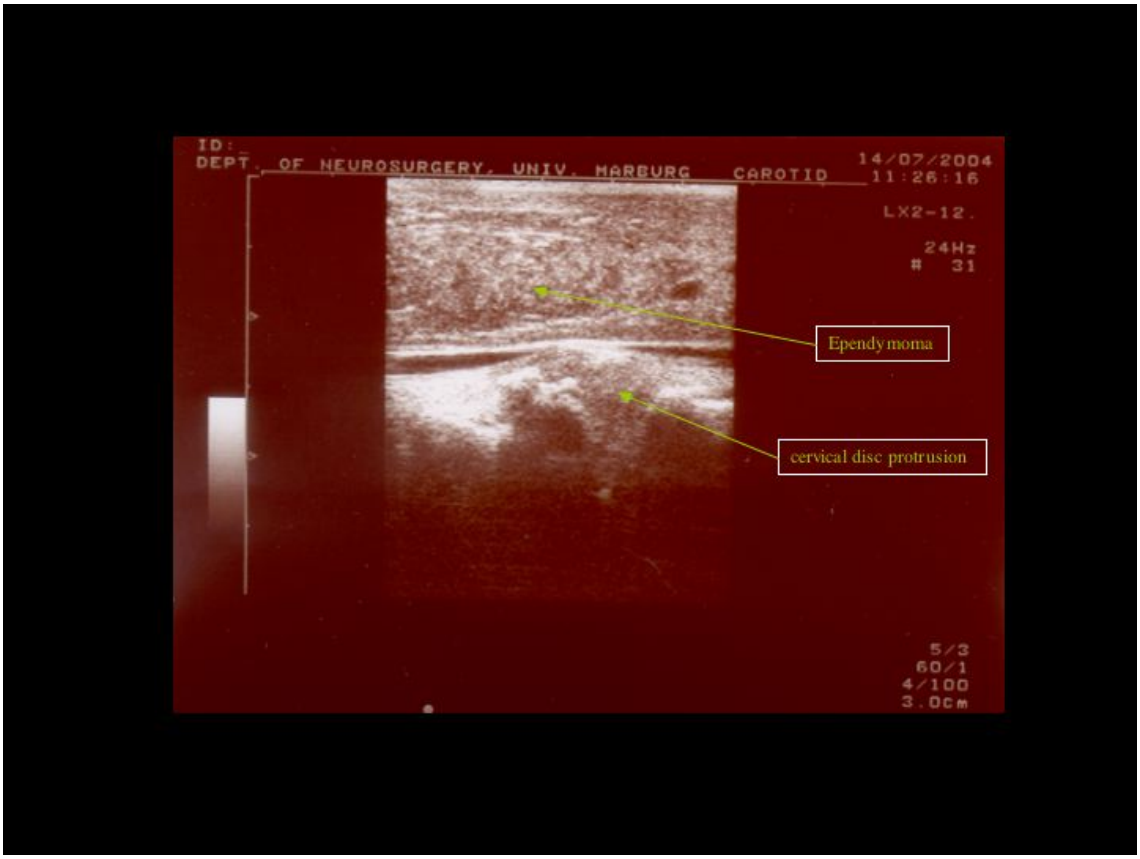
Intraoperative ultrasound used during surgery of spinal tumors has evolved rapidly. In addition to determining if the tumor is adequately exposed rostrocaudally before opening the dura, dopplersonographic measurements can locate significant arteries and show their relationship to the tumor. We present two cases in which the anterior spinal artery could be located before opening the dura helping in understanding the boundaries of the tumor as compared to the vessels.

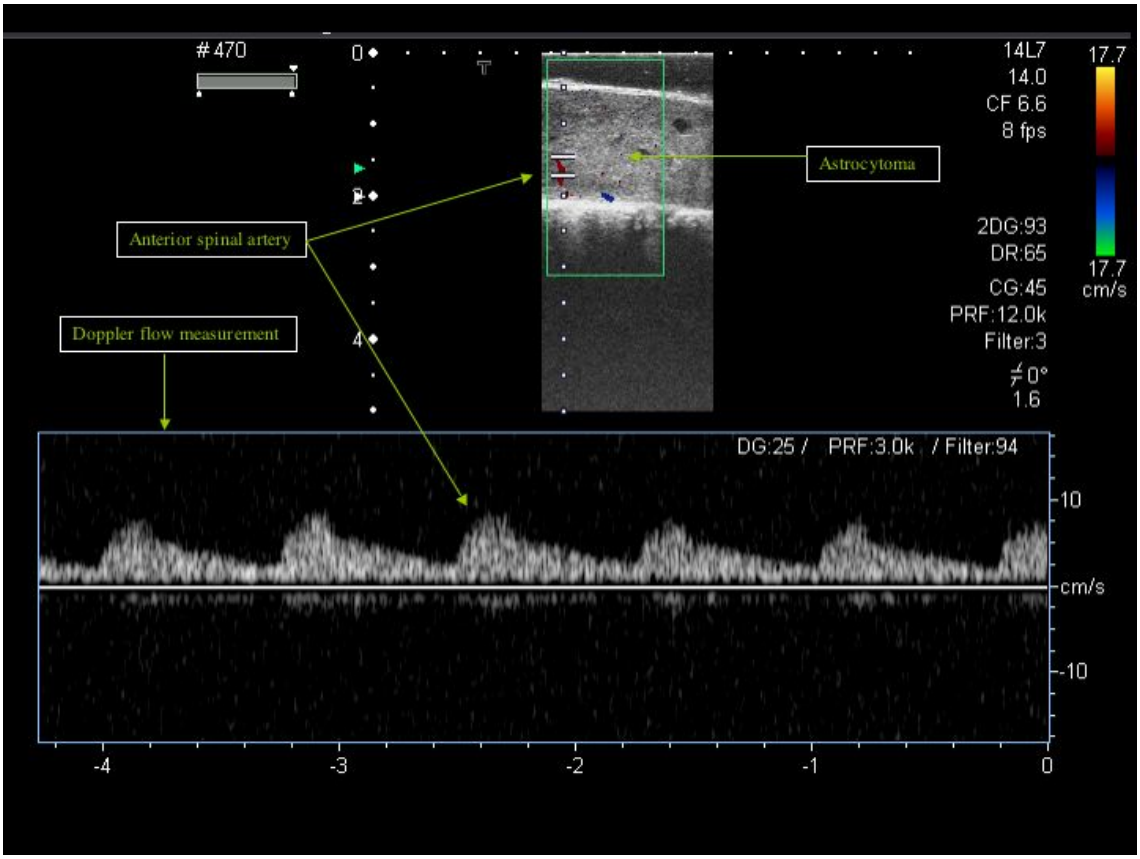
Method

In 2004 we operated on 2 males (14-36yo), suffering from multiloculated astrocytoma and cervical ependymoma, respectively. After performing a hemilaminectomy at C7 and Th4 to Th7 for the multiloculated astrocytoma and a laminectomy C4 to C7 in the case of the ependymoma, intraoperative sonography was used. In connection with an ultrasound system of the newest generation (TOSHIBA Aplio SSA-770A) we deployed a hockey stick probe (TOSHIBA PLT-1202S). For locating the arteries the ultrasound device was set to color-coded duplex mode.
Results: In both cases the tumor was sharply depicted and a close relationship to the anterior spinal artery confirmed. Laminectomy as opposed to hemilaminectomy allowed more leeway for manipulation of the ultrasound probe in different directions.

Conclusions

Recent intraoperative ultrasound technology sharply depicts intramedullary tumors and arteries with a minimum diameter. Further ultrasound probe development may enable localization and adequate visualization of smaller calibered vessels, thereby giving additional information on arterial supply and venous drainage.


ID:
DEPT. OF NEUROSURGERY, UNIV. MARBURG CAROTID
14/07/2004
11:26:16
LX2-12.
24Hz
31
Ependymoma
cervical disc protrusion
5/3
60/1
4/100
3.0cm


#470
14L7
14.0
CF 6.6
8 fps
17.7
17.7
cm/s
Astrocytoma
Anterior spinal artery
Doppler flow measurement
2DG:93
DR:65
CG:45
PRF:12.0k
Filter:3
≠0°
1.6
DG:25 / PRF:3.0k / Filter:94
10
cm/s
-10
-4
-3
-2
-1
0