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Awake surgery for lesions in critical areas in children: our experience with 9 cases

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Introduction: Awake surgery is of real interest in the resection of cortico-subcortical lesions in functional regions or near to it. In children, this technique is uncommon because of the emotional fragility and difficulties of cooperation related to age. We report a series of 9 patients operated in awake surgery conditions.

Materials and Methods: Nine patients (3 M and 6 F) between 8 and 17 years old were operated on between 2005 and 2012. The pathology was tumoral for 8 patients (3 DNET, 1 ANET, 2 gliomas, 1 plexus carcinoma and 1 ventricular atrium meningioma) and vascular for one (cavernoma). In 7 cases the lesion was located on the dominant side: 3 in the rolandic gyrus, 2 at the ventricular junction, 1 precentral and 1 in the parietal lobe. In 2 patients the lesion was on the non-dominant side: one with glial lesion in the rolandic gyrus and another in the precentral area with speech activation on the functional MRI. All patients were studied with functional and spinal MRI before surgery and prepared by the psychologist. All information was given about the phases of the surgery. Local anesthesia was performed with ropivacaine combined with intravenous sedation with remi-fentanyl and propofol. Patients were in spontaneous ventilation throughout the procedure. The dura mater was soaked with Naropein. The functional mapping was realized by direct bipolar cortical stimulation in all cases.

Results: All patients but one showed a good cooperation to complete resection without aggravation. One patient complained a bad recall of the procedure but without post-traumatic stress disorder. No clinical aggravation was observed after surgery.

Conclusions: Awake surgery may be realized in pediatric patients but an adequate preparation and participation of children is mandatory. The age is an important limiting factor. The functional benefits and quality of resections represent a real advantage.