Resection of filum terminale ependymoma

Florian Ringel · Bernhard Meyer

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Learning targets

- Differential diagnosis of intradural extramedullary tumors,
- surgical technique of tumor resection,
- surgical identification of filum terminale,
- intradural tumor resection via hemilaminectomy.

Introduction

Spinal intradural tumors are rare lesions. The film illustrates the surgical technique of a resection of an intradural extramedullary tumor just below the conus medullaris.

Case description

A 25 year-old Caucasian man suffered from pain of the thoracolumbar junction since 5 years. After experiencing a recent exacerbation of pain since some weeks a MR scan of the lumbar and thoracic spine was obtained. Imaging

revealed an intradural spinal tumor behind T12 and L1 just below the level of the conus. The tumor was contrast enhancing and filled almost the complete diameter of the spinal canal.

Physical examination revealed no neurological deficits.

Surgical procedure

The patient was placed in prone position and the spinal levels T12 and L1 were identified. After a left-sided unilateral exposure of the bony spine, a complete left-sided hemilaminectomy of T12 and a partial hemilaminectomy of T11 and L1 were performed with a high-speed drill and punches. A longitudinal durotomy was performed and the tumor exposed. As a first step in the tumor resection the tumor was stepwise debulked with an ultrasonic aspirator. After debulking the cranial attachment of the tumor was visible and the tumor origin from the filum terminale (identified by the typical artery on the filum) was revealed. Finally, the tumor was resected by cutting the filum.

Postoperative information

The patient recovered well. He complained of some surgery associated wound pain, other than that he was completely without any symptoms and neurologically fully intact. No complications were observed. Postoperative MR imaging documented a complete resection of the tumor,

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F. Ringel · B. Meyer (✉)
Department of Neurosurgery, Klinikum rechts der Isar,
Technische Universität München, Munich, Germany
e-mail: bernhard.meyer@lrz.tum.de

further imaging of the neuraxis excluded any CSF borne seeding. The histopathological evaluation revealed a myxopapillary ependymoma WHO grade 1. The patient was discharged on day 4 after surgery (which is early in the German medical system).

Discussion and conclusion

Primary spinal tumors, i.e. tumors of the spinal cord, the meninges and the cauda equina are rare, epidemiological data have been recently summarized [1]. The age-adjusted incidence for spinal ependymomas at any location is 0.21 per 100,000 persons and year [1]. Tumors of the cauda equina are less frequent than tumors of the spinal cord or spinal meninges, however, ependymomas comprise the second most common histology of cauda equina tumors after tumors originating from spinal nerves [1, 2]. Myxopapillary ependymomas are a distinct variant of ependymomas classified as WHO grade 1, which account for 35 % of cauda equina tumors [3]. Cauda equina ependymomas arise from ependymal cell remnants of the filum terminale. Surgical tumor resection is the treatment of choice and gross total resection should be achieved [4]. Tumor resection can be safely achieved if the tumor is encapsulated. However, upon growth, tumor encapsulation can be lost and adherence to cauda equina nerve roots can hamper surgical resection and be associated with new deficits after surgery [5]. The tumor presented was encapsulated,

adherence to surrounding nerve roots was not seen and finally the tumor was removed by transection of the filum terminale.

Conflict of interest None.

References

1. Duong LM, McCarthy BJ, McLendon RE, Dolecek TA, Kruchko C, Douglas LL, Ajani UA (2012) Descriptive epidemiology of malignant and nonmalignant primary spinal cord, spinal meninges, and cauda equina tumors, United States, 2004–2007. *Cancer* 118: 4220–4227
2. Engelhard HH, Villano JL, Porter KR, Stewart AK, Barua M, Barker FG, Newton HB (2010) Clinical presentation, histology, and treatment in 430 patients with primary tumors of the spinal cord, spinal meninges, or cauda equina. *J Neurosurg Spine* 13: 67–77
3. Wager M, Lapierre F, Blanc JL, Listrat A, Bataille B (2000) Cauda equina tumors: a French multicenter retrospective review of 231 adult cases and review of the literature. *Neurosurg Rev* 23: 119–129
4. Bostrom A, von Lehe M, Hartmann W, Pietsch T, Feuss M, Bostrom JP, Schramm J, Simon M (2011) Surgery for spinal cord ependymomas: outcome and prognostic factors. *Neurosurgery* 68: 302–308
5. Sakai Y, Matsuyama Y, Katayama Y, Imagama S, Ito Z, Wakao N, Kanemura T, Yoshida G, Sato K, Ando T, Nakamura H, Kato F, Yukawa Y, Ito K, Ishiguro N (2009) Spinal myxopapillary ependymoma: neurological deterioration in patients treated with surgery. *Spine (Phila Pa 1976)* 34:1619–1624