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A rare case of malignant nonfunctional retroperitoneal paraganglioma with C3 spinous process metastasis

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29 neck and pain in the cervical spine. The physical examination demonstrated mild

1 tenderness and percussion pain on the back of the neck, normal sensation and strength
2 of limbs, decreased sensation in the right shoulder, intact range of motion of the
3 cervical spine, and no Hoffmann's sign. Lateral plain radiography and 3D-CT of the
4 cervical spine showed destruction of the C3 spinous process, vertebral plate, and left
5 lateral mass (Fig. 1A, B). Contrast-enhanced T1-weighted MRI showed an elliptical
6 occupying lesion with high signal intensity at the C3 and C4 appendix region (Fig.
7 1C). CT angiography of the cervical arteries showed intact carotid and vertebral
8 arteries that had no signs of tumor invasion (Fig. 1D). Blood pressure was normal.
9 The patient underwent debridement, decompression, bone graft fusion, and
10 fixation(Fig. 1E). His blood pressure had no obvious fluctuations intraoperatively.
11 Postoperatively, the cervical pain and the decreased sensation in the right shoulder
12 were obviously relieved. Histopathological examination showed that the tumor was a
13 paraganglioma. Three months later, a retroperitoneal 10×7×5 cm phyma was found
14 accidentally during abdominal CT evaluation. Postoperative pathology verified that
15 the retroperitoneal tumor was paraganglioma. Six months later, he again complained
16 of a stiff neck. Coronal plane 3D-CT showed increasing destruction of C3 and a left
17 lateral mass. The left C3 pedicle and partial vertebral body were also invaded (Fig.
18 1F). It was suggested that the patient undergo radiotherapy.

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20 We thought that the cervical appendix tumor was the origin of the retroperitoneal
21 paraganglioma. Paragangliomas are usually defined as tumors arising from an extra-
22 adrenal paraganglion [1]. They are mostly benign and are accompanied by
23 catecholamine hypersecretion [2]. To our knowledge, however, malignant
24 nonfunctional retroperitoneal paraganglioma with C3 spinous process metastasis is
25 rare.

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2 **References**

- 3 1. Ojha BK, Sharma MC, Rastogi M, Chandra A, Husain M, Husain N (2007)
4 Dumbbell-shaped paraganglioma of the cervical spine in a child. Pediatr Neurosurg.
5 43(1): 60-64
6 2. Cai P, Mahta A, Kim RY, Kesari S (2012) Paraganglioma with intracranial
7 metastasis: a case report and review of the literature. Neurol Sci. 33(5): 1183-1184

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9 Figure legends

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11 Fig.1 Lateral plain radiography of cervical spine showed the extensive destruction of
12 C3 appendix (white arrow). (A) CT imaging scan showed the destruction of C3
13 spinous process, vertebral plate, and left lateral mass and an elliptical soft tissue
14 shadow intruding into the vertebral canal instead of the C3 spinous process (white
15 arrow). (B) Contrast-enhanced T1-weighted sequence MRI showed the lesion with
16 high signal intruded into the cervical spinal canal, and the spinal cord was pushed to
17 the right. (C) CT angiography of cervical arteries showed intact arteria carotid and
18 vertebral artery. (D) Postoperative radiography of cervical spine showed C2-5 were
19 fixed. (E) Coronal plane of 3D-CT 6 months after surgery showed increasing
20 destruction of C3 left lateral mass. The left C3 pedicle and partial vertebral body were
21 also invaded. (F)

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