RARE ETIOLOGY OF TRIGEMINAL NERVE NEURALGIA - METASTATIC ADENOCARCINOMA OF THE COLON

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ABSTRACT:
Trigeminal neuralgia is a common condition in elderly patients. In this group of patients, trigeminal neuralgia mainly occurs due to a neurovascular conflict. However, the primary or secondary tumour lesions located at the level of the trigeminal nerve (in Meckel's cave) are rare. The authors are presenting the case of a 70 year old patient who was hospitalized for right trigeminal neuralgia, whose subsequent imaging explorations and anatomopathological examination revealed a metastatic adenocarcinoma of the colon, which is a rare etiology of trigeminal neuralgia.

Key words: trigeminal metastasis, metastasis in Meckel's cave, trigeminal neuralgia.

INTRODUCTION
Meckel's cave is an arachnoidal pouch with cerebrospinal fluid (CSF) located near the apex of the petrous bone and containing the Gasserian ganglion and major portions of the trigeminal nerve with leptomeningeal coverings [1]. The tumours located at the level of Meckel's cave are rare and represent approximately 0.5% of all intracranial malignancies [2, 3].

The most common primary tumours of Meckel’s cave are schwannoma of the trigeminal nerve [4] and meningiomas [5]. Moreover, metastases can also develop at the level of the trigeminal nerve, but their most common origins are gastrointestinal and thyroid cancer, ovarian and breast cancer, lymphoma and melanoma [6]. Among these, the metastases of adenocarcinoma of the colon are extremely rare, the literature reporting only three such cases to date [7, 8, 9].

In this paper, we are reporting a new case of metastatic adenocarcinoma of the colon located at the level of the right trigeminal nerve, highlighting its anatomy and semiology of neurosurgical skull base, which is extremely important for a good treatment choice [10].

CASE REPORTS
A 70-year old patient was hospitalized for right second branch trigeminal neuralgia. The Head MRI scan revealed an increase in the size of the right cavernous sinus (fig. 1A,B). Even though treatment with 1200 mg carbamazepine / day was administered from the very beginning, the symptoms did not improve. Eight months later, the MRI scan
Figure 1A. T2-weighted coronal MRI image and 1B. T1-weighted axial gadolinium-enhanced MRI image showing enlargement of right cavernous sinus (red arrows)

was repeated, showing an enlargement of the right cavernous sinus, as well as the enhancement of lesion (fig.2). The patient followed radiosurgical treatment (Gamma knife) without, however, reducing his symptoms. The biopsy of the tumour revealed metastatic adenocarcinoma of the colon.

Figure 2. T1-weighted axial gadolinium-enhanced MRI images (axial, coronal, sagittal) after 8 months, showing enlargement of right cavernous sinus
DISCUSSION

The metastasizing of the trigeminal nerve trunk or of the Gasserian ganglion could occur through hematogenous spread from extracranial sources, through continued invasion from extracranial tumours (infratemporal fossa, nasopharyngeal or maxillo-facial tumours) or CSF [11]. The most common metastases to Meckel's cave are colorectal and esophageal adenocarcinoma and breast carcinoma [7, 12, 13]. Moreover, it can also be metastasized by systemic lymphoma [14], ovarian and liver cancer or melanoma [15,16,17], as well as thyroid follicular carcinoma [18].

The adenocarcinoma of the colon very rarely metastasizes the trigeminal nerve, an extensive search through the literature revealing only 3 cases reported [7, 8, 9].

The trigeminal nerve is the largest of the cranial nerves that sends sensory information from the face and ensures motor innervation to the muscles of mastication. In the case of Meckel's cave tumour, the most common symptom involved is trigeminal neuralgia. It involves all three branches of the trigeminal nerve [7, 12, 19]. In most cases, MR-imaging is considered to be the best exploration available in assessing patients with trigeminal nerve disorders [20].

The treatment of trigeminal nerve metastases consists of stereotactic radiosurgery, needle rhizotomy [21] or radiofrequency electrocoagulation [22] which can be improved by neuronavigation guided approaches [23]. Among these, the most commonly used is radiosurgery (Gamma knife). While some studies showed that the radiation dose must range between 20 and 65Gy [24, 25], others argued that the doses must be higher, i.e. 80Gy [22]. Nonetheless, in the case of skull base metastases, the rate of symptom relief is of 30% [26]. It is important to mention the fact that cranial nerves in the cavernous sinus can tolerate between 30 and 40 Gy [27, 28]. The most severe stereotactic radiosurgery complications were reported to be temporal lobe necrosis, haemorrhage from the carotid artery, cranial neuropathies and CSF leakage [29, 30, 31].

CONCLUSIONS

Even though the most common tumours of the trigeminal nerve are meningioma and schwannoma, this nerve can also be the site of metastasis of a cancer not only from the head and neck region, but also from the primary tumour located elsewhere in the body, including a digestive adenocarcinoma (colon cancer), like in our case.

Knowledge of the anatomy of the cranial nerve anatomy and perineural spread models in trigeminal nerve tumours is important for establishing diagnosis as well as for planning of the radiosurgery.

REFERENCES: