## **Collision tumor**

Tumor-to-tumor metastasis inside a meningioma

Intracranial primary collision tumors of different histologic types are rare. Until now, it is still unclear about the occurrence of collision tumors.

## **Examples**

## **Pituitary Collision Tumor**

They are the simultaneous occurrence of more than one type of neoplasm within an anatomic space, often difficult to distinguish from intratumoural heterogeneity in diffuse gliomas <sup>1)</sup>.

There have been isolated case reports of astrocytic (malignant) transformation of a histologically proven Dysembryoplastic neuroepithelial tumor (DNET).

Perhaps one with gemistocytic differentiation. The mechanism of development of a gemistocytic astrocytoma in a proven DNET remains a matter of debate. Its proposed mechanism is as either a collision tumor or the neoplastic change within DNET.

These reports of malignant transformation lend credence to the theory that there is at least a subgroup of lesions amongst DNETs, which have a malignant behavior and require adjunct treatment strategies. The issue is to identify this specific subset. How to do this? Whether some special characteristics on histopathologic examination or the genetic analysis hold the key remains unanswered. Till then, the need for lifelong surveillance in a case of DNET cannot be over emphasized <sup>2</sup>.

## **Case reports**

a 14-year-old male neutered French Bulldog. Computed tomography of the brain revealed a poorly defined, intra-axial lesion affecting the left frontal lobe. Following euthanasia, histological examination showed an anaplastic oligoastrocytoma invading the brain parenchyma and an adjacent fibrous meningioma. As synchronous intracranial tumours are rare in animals, the aims of this report are to describe the clinical, imaging and histopathological features of an intracranial collision tumour in a dog and highlight the importance of a complete histopathological study despite the imaging findings <sup>3</sup>.

A 66-year-old female who presented with headache, nausea and vomiting. Magnetic resonance imaging(MRI) scan showed that there were two primary intracranial tumors occurring simultaneously at adjacent sites of the right cerebral hemisphere. The pathology of tumors showed two distinct tumors: meningioma (WHO I) and glioblastoma (GBM). This is a rare case where two different

intracranial primary tumors occur at adjacent sites but the patient had no history of head trauma, neurological surgery or radiation therapy.

According to previous and this report, the most common type of intracranial primary collision tumor is composed of a benign meningioma and a glioblastoma. During the occurrence of collision tumors, one tumor can play a role in the formation and growth of the other one <sup>4</sup>.

Tourne et al., report the case of a 44-year-old woman admitted for intracranial hypertension. MRI revealed a right intra-axial frontal mass, composed of a hypervascular nodular portion contrasting with a large non-enhanced infiltrative and muliticystic portion. Histopathological examination showed the occurrence of two morphologically different gliomas. The largest component corresponded to an anaplastic astrocytoma, IDH1-mutated. The second corresponded to a leptomeningeal nodule reminiscent of a pleomorphic xanthoastrocytoma. Both tumoural components exhibited anaplastic features, WHO Grade III. Immunohistochemical and molecular studies showed that the two components were identical, IDH1 R132H mutated but without BRAF V600E mutation. Tumour progression was assessed two years after surgery following radiotherapy and chemotherapy, showing supratentorial leptomeningeal dissemination.

Collision tumours and combined neoplasms have been rarely described in the brain and only four similar articles report the synchronous occurrence of two primary gliomas. A review of the literature is proposed, focusing on criteria that could be used to discriminate them <sup>5)</sup>.

1)

Tourne M, Tauziède-Espariat A, Dezamis E, Saffroy R, Dhermain F, Chrétien F, Varlet P. Combined Diffuse Astrocytoma and Pleomorphic Xanthoastrocytoma grade III sharing IDH1 R132H mutation. World Neurosurg. 2018 May 30. pii: S1878-8750(18)31110-0. doi: 10.1016/j.wneu.2018.05.156. [Epub ahead of print] PubMed PMID: 29859360.

Aggarwal A, Salunke P, Sodhi HB, Vasishta RK, Gowda KK. Dysembryoplastic neuroepithelial tumor transforming into malignancy: a case report. Neurol India. 2014 May-Jun;62(3):323-5. doi: 10.4103/0028-3886.137011. PubMed PMID: 25033864.

Pons-Sorolla Casanova M, Mariné AF, Pumarola I Batlle M, Feliu-Pascual AL. Meningioma and glioma as the first collision brain tumour reported in small animals. J Comp Pathol. 2023 Jul 17;204:55-58. doi: 10.1016/j.jcpa.2023.06.001. Epub ahead of print. PMID: 37467698.

Zhang Z, Yang Y, Zhang K, Zhuang J, Shao F, Liu H, Xing Y, Xu S. Collision tumor of glioblastoma and meningioma: case report and literature review. World Neurosurg. 2018 Jun 8. pii: S1878-8750(18)31200-2. doi: 10.1016/j.wneu.2018.05.246. [Epub ahead of print] PubMed PMID: 29890277.

Tourne M, Tauziède-Espariat A, Dezamis E, Saffroy R, Dhermain F, Chrétien F, Varlet P. Combined Diffuse Astrocytoma and Pleomorphic Xanthoastrocytoma grade III sharing IDH1 R132H mutation. World Neurosurg. 2018 May 30. pii: S1878-8750(18)31110-0. doi: 10.1016/j.wneu.2018.05.156. [Epub ahead of print] PubMed PMID: 29859360.

From: https://neurosurgerywiki.com/wiki/ - **Neurosurgery Wiki** 

Permanent link: https://neurosurgerywiki.com/wiki/doku.php?id=collision\_tumor

Last update: 2024/06/07 02:59



Neurosurgery Wiki - https://neurosurgerywiki.com/wiki/