Brain metastasis from ocular malignant melanoma: a case report of a brain secondary lesion occurring 5 years after the primary lesion treatment

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Adv Dermatol Allergol 2019; XXXVI (3): 371–373
DOI: https://doi.org/10.5114/ada.2019.85644

Ocular melanomas account for about 3.7% of all cases of melanoma and are the least common tumours of this organ. In the melanoma of the eye, distant metastases are common, and they occur in about half of the patients. The period from the occurrence of the primary to secondary change is 4–5 years [1]. Most often they are located in the liver, less often in lungs. Brain metastases from ocular malignant melanoma are very rare and usually observed with parallel occurrences of the liver [2]. In this paper we present a case of brain metastasis from choroidal melanoma, which occurred 5 years after the primary lesion treatment.

A 38-year-old patient was admitted to the Department of Neurosurgery, Neurotraumatology and Paediatric Neurosurgery in September 2014, November 2014 and January 2015 due to the diagnosis of a brain tumour in the magnetic resonance imaging (MRI) examination. The patient was initially treated for left eye choroidal melanoma. The first symptoms appeared in 2009, and surgical treatment was applied. In August 2014, the patient was diagnosed at the Department of Surgery because of abdominal pain. At that time tumours in the liver were diagnosed and the resection was performed. The result of the histopathological examination of resected lesions indicated melanoma. Then, the patient was transferred to the Regional Oncology Center for further treatment (CHTH). During the stay, the MRI of the head was performed, in which the tumour of the left parietal lobe was shown. The patient was transferred to the Department of Neurosurgery at the beginning of September 2014. At the time of admission, the patient was in a good general condition, with no neurological deficits. After analysing the entire clinical picture and the results of additional tests, the patient was qualified for surgical treatment.

A craniotomy of the left parietal region was performed. The dura was incised in a C-like shape. After retraction of the brain, the navy blue tumour masses was revealed and then removed macroscopically. The part attached to the sagittal sinus was coagulated. Material for histopathological examination was collected. The bone flap was restored. The course of the surgery and the postoperative period were without complications.

The initial histopathological diagnosis was oligodendroglioma anaplasticum, WHO III (Ki67 20%). After obtaining additional clinical data and re-evaluation, during which a strong immunohistochemical reaction for Melan-A was obtained, malignant melanoma metastasis was found.

The patient was discharged from the Department in a good general condition, with no neurological deficits. In October 2014, the patient was qualified for resection of lesions in the pancreas and lymph nodes around the hepatic-duodenal ligament. At the beginning of November 2014, the patient was admitted to the Emergency Medicine Clinic because of severe headache. A computed tomography (CT) scan of the head showed at the level of craniotomy within the left parietal lobe, a nonhomogeneous hyperdense lesion of approx. 15 × 28 × 26 mm, adjacent to the sagittal sinus and the parietal lamina – suspicion of recurrence, with slightly reduced density of subcortical white matter in its neighbourhood – a small oedema. In addition, the image of the cerebrum and intracranial fluid spaces was normal. Ventricular system symmetric were not widened or displaced. The presence of intracranial bleeding was not demonstrated. The image of the bones of the skull, apart from changes after craniotomy, was correct. Based on the history of the disease, clinical symptoms and CT picture, the patient was qualified for urgent surgical treatment.

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Received: 13.02.2018, **accepted:** 1.04.2018.

By way of the previous procedure, the bone flap was unveiled, the presence of a thick layer of fibrin above and below the bone sheet was noted. The fibrin was removed. The opening of the bone was expanded, the dura mater was cut, revealing swollen brain. A bluish-blue tumour was located at the site of the previous operation. Macroscopically, the tumour has been removed completely. The bone flap was not restored. The surgery confirmed the presence of a recurrent brain tumour in the left parietal region. The course of surgery and the postoperative period were without complications.

In the histopathological examination of the intraoperatively collected material, immunohistochemical staining showed a strong positive reaction for Melan-A, which confirmed the diagnosis of melanoma recurrence.

The patient was discharged from the Department in a good general condition, with no neurological deficits. In December 2014, the patient had a positron emission tomography (PET) scan and mastectomy of both breasts. At the beginning of January 2015, the patient was again hospitalized in the Department of Neurosurgery to perform an MRI examination due to a suspicion of tumour recurrence in the left parietal region. The study showed an area of gliosis/oedema in the left parietal lobe and parafalxially inhomogeneous, strongly enhancing the area of approx. 24 × 12 × 18 mm. After a month, a follow-up examination was carried out, which showed an enlargement of the tissue to 17.6 × 23.9 × 26.9 mm. The patient died in February 2015.

Metastasis of the ocular malignant melanoma to the brain is extremely rare and most often occurs simultaneously with liver metastases. Lorigan *et al*., in clinical and radiological studies, found a total of five cases of brain metastases in 110 cases of metastatic choroidal melanoma [3]. In all cases, metastases to the liver occurred simultaneously, and in four – multi-organ metastases. In the presented case, the change in the brain revealed in the first MRI was not taken into account as metastasis of the melanoma, it was not indicated by the appearance of the tumour. These neoplasms very rarely metastasize to the brain, which is why it also was not included in the original diagnosis. Confirmation of the diagnosis of metastatic melanoma is based on histopathological examination of intraoperatively collected tumour material. In the immunohistochemical examination, melanomas show a positive reaction for Melan-A [4]. In the presented case, the primary standard histopathological examination indicated oligodendroglioma anaplasticum, WHO III. After re-analysis of clinical data (secondary change appeared 5 years after the treatment of the primary lesion and coexisted with histopathologically confirmed liver metastases) and control histopathological examination with the use of recommended Melan-A antibodies, a definitive diagnosis of malignant melanoma metastasis was made. Therefore, it seems advisable to conduct extended histopathological diagnostics whenever the patient was previously treated for melanoma.

The surgical treatment of melanoma metastases to the brain aims to improve the patient's functional and neurological status, thus improving the quality of life. In the presented case, this method of treatment was used twice. The first time after primary diagnosis of a brain tumour in MRI, and the second time, 2 months after the first surgical intervention, when after the CT examination of the head made due to severe headache, a recurrence of melanoma metastasis was detected. Both treatments allowed to obtain a significant improvement in the neurological and functional condition of the patient.

Detection of metastatic melanoma is associated with poor prognosis. At the time of diagnosis of the primary lesion, simultaneous metastases are detected in less than 4% of patients [5]. In the further course of the disease, metastases develop in about half of patients. After the detection of metastases, 80% of patients die within 1 year and 92% die within 2 years [6]. A long-term survival is very rare. The average survival time from the detection of metastases is about 6 months [6]. Metastases are the main cause of death among patients with iris melanoma [7, 8]. This is mainly due to the lack of effective systemic therapy [9, 10]. In the described case, the metastases were diagnosed about 5 years after the primary change was detected. The patient developed multi-organ metastases in the liver, brain, pancreas, lymph nodes around the hepatodecuspinal ligament and breasts. In spite of undertaken surgical treatment of each change and complementary treatment in the form of chemotherapy, the patient died after 7 months from the detection of metastases.

Conflict of interest

The authors declare no conflict of interest.

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