

Metastatic tumour of colorectal cancer in vermis cerebelli. Neurosurgical management

*Przerzut raka okrężnicy w obrębie robaka mózdzku.
Postępowanie neurochirurgiczne*

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Synchronous metastases of colorectal cancer appear in app. 15% of patients. The most common location of the metastases are liver and lungs. Brain metastases are rare and appear in less than 5% of cases [1–3], typically located in the frontoparietal region and posterior fossa, especially in the cerebellar hemisphere. Colorectal cancer metastases in cerebellar vermis are very rare. The metastatic focuses can appear at any time after initial diagnosis of the primary tumour (synchronous and metachronous metastases), as well as after operation and ileus resection, but usually they appear in the late stage of disease. The brain metastasis decreases the life expectancy [1, 2, 4–7]. Early diagnosis and management of colorectal cancer increases the survival rate. The management after diagnosis of brain metastasis using only radiotherapy (whole brain radiotherapy – WBRT) offers a few months of life. Sur-

gical therapy of the brain metastasis with adjuvant therapy may greatly increase the life expectancy [1, 8–10]. Metastatic organ dissemination and multiple brain metastases create poor perspectives.

Singular metastatic brain tumour in correlation with negative metastatic dissemination to other organs in the diagnostic process vastly improves the expectations and effectiveness of oncological therapy. Surgical treatment of a singular metastatic tumour located in the cerebellar vermis creates much better perspectives than the palliative scheme of management only. A ventriculo-peritoneal valve (shunt) does not prevent the growth of the metastatic focus resulting in brainstem compression. This treatment only affects ventricular enlargement. In many cases patients qualified for brain surgery require special management due to artificial stoma because the surgical procedure is usually performed in a sitting position.

Patients admitted to the Neurosurgical Department due to metastatic tumour in the posterior fossa have a variety of neurological symptoms. They depend on the localization-cerebellar hemisphere or vermis. If the metastatic tumour is located in the vermis, we can also observe the symptoms of hydrocephalus caused by pressuring the Sylvian aqueduct (Figures 1–3). Singular metastatic tumour should always be removed even if it is difficult to approach, i.e. vermal metastatic tumour. Ventriculo-peritoneal shunt should not be considered as a first option due to brainstem pressure and the possible occurrence of rapid local pressure symptoms. The operation is performed in a sitting position, allowing easier access to the tumour. A supracerebellar approach is recommended: a cut in the midline and suboccipital craniotomy. After the incision of the dura mater, the natural lowering of the upper surface of the cerebellar hemisphere takes place. If the tumour is located in the vermis, a linear midline incision of cortex and local drainage of cerebrospinal fluid (CSF) should be made to gain convenient operation access. Venous vessels in

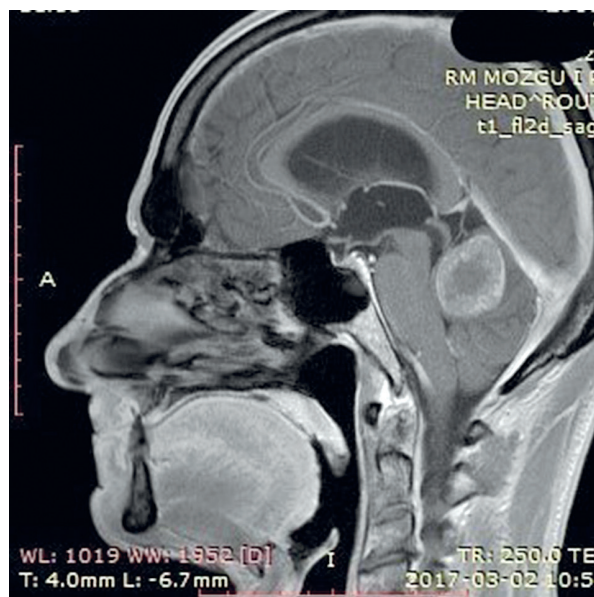


Figure 1. Sagittal section



Figure 2. Frontal section

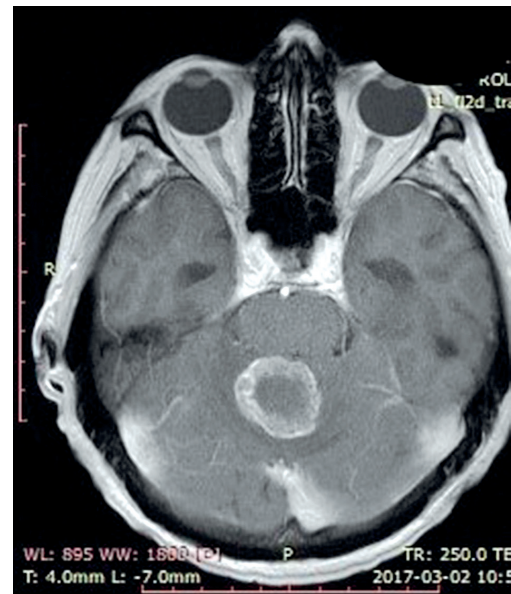


Figure 3. Horizontal section

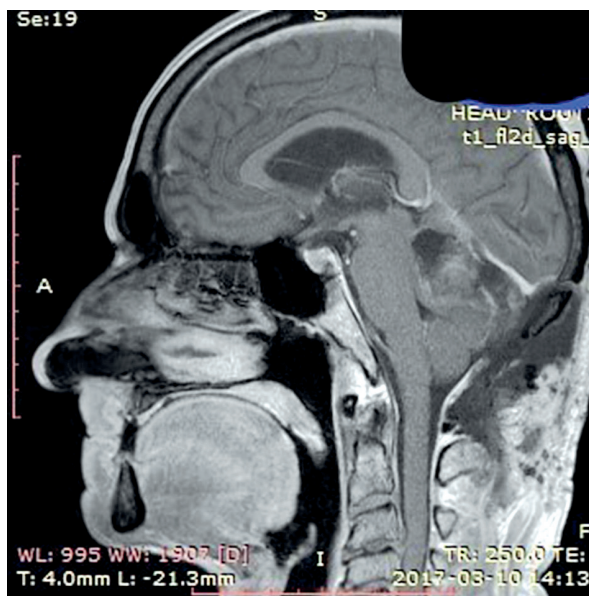


Figure 4. Sagittal section after operation

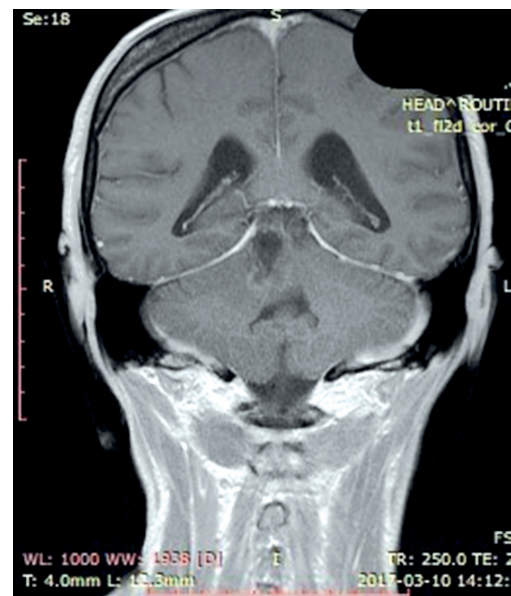


Figure 5. Frontal section after operation

the operation field must not be occluded, to avoid obstruction of venous drainage and possible cerebellum swelling. The dura must be sealed using stitches and glue, and the bone flap has to be restored. Postoperative documentation is attached (Figures 4–6). The palliative therapy is the next decision.

The average life expectancy after diagnosing metastatic tumours within the brain in the case of colorectal cancer is 4 months. Not all patients are qualified for neurosurgical procedures because the occurrence of brain metastases is often associated with a sudden deterioration of the patient's condition. Most metasta-

ses are metachronous. Multiple brain dissemination should not be qualified for operation. WBRT radiation therapy slightly extends the life expectancy. Patients undergoing neurosurgical intervention and tumour removal followed by complementary radiotherapy (WBRT) have the longest survival expectancy [1]. Compared to other neoplastic processes, the occurrence of metastatic colorectal cancer to the brain is very rare – less than 5% [1, 5, 8]. Tumours in the posterior cavity appear in less than 15% of patients in brain metastatic cases. The most common brain metastasis originates from the rectosigmoid cancer. Generally,

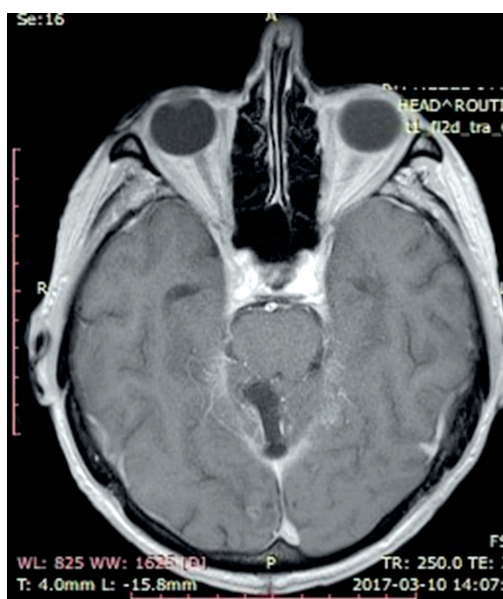


Figure 6. Horizontal section after operation

poor prognosis of treatment of patients with metastatic brain tumours is dominant in publications. It is believed that metastases to the brain are a late stage of the generalisation of neoplastic disease, and it does not matter whether they are multiple or singular localisations.

The best candidates for neurosurgical treatment are patients with well-controlled organ changes in chemotherapy programs and monoclonal antibodies that have had a single metastasis with an operational anatomical location. The use of additional WBRT after surgery extends the survival period [1, 8–10].

Regarding the possible treatment options, the above method of surgery is of high importance. The choice between tumour resection and purely palliative surgery—a ventricular shunt – allows anticipation of the influence on neurological symptoms resulting from early stage compression on the brainstem. Operation of the cerebellar vermis tumour reduces direct pressure on the brainstem and life-threatening symptoms. The shunt reduces only the enlargement of the ventricular system and hydrocephalus symptoms. This approach allows the rational use of complementary procedures in the form of chemotherapy, monoclonal antibodies, and WBRT.

Based on the presented arguments, we believe that each patient should be individually assessed, based on the proposed criteria. Obtaining good post-operative course, choosing the suitable method of surgery, and implementation of complementary therapies allows better control of the course of the basic disease.

Conflict of interest

The author declares no conflict of interest.

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