# Gastrointestinal stromal tumor metastases

The most common sites of metastasis are liver and peritoneum, while bone metastasis is rare.

Park et al. from the Gil Medical Center, Gachon University College of Medicine, Incheon, Korea, report on a patient with skull metastasis after seven years of treatment with imatinib for metastatic GIST. She underwent metastasectomy consisting of craniectomy with excision of the mass, and cranioplasty and continued treatment with imatinib and sunitinib, without evidence of cranial recurrence. She died of pneumonia sepsis one year after metastasectomy. Skull metastasis of GIST is a very rare presentation, and an aggressive multidisciplinary approach should be considered whenever possible [1)].

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Intracranial metastases of gastro intestinal tumors are very rare.

O'Halloran et al. presents the first documented case report of a GIST that presented clinically with pituitary symptoms due to a pituitary metastasis [2)].

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We describe the case of 66-year-old male that presented with headache and vomiting. Physical examination found a kinetic cerebellar syndrome. Brain CT scan and MRI showed a right cerebellar tumor. Sub-occipital craniotomy was performed and the tumor was completely resected. Surgical outcomes were marked by the occurrence of an abdominal pain two days after brain surgery. Peritonitis was diagnosed and the patient underwent surgery. Per-operatively, a hemorrhagic tumor perforating the intestines was found and resected. Pathologic examination of the cerebral tumor's resection piece and the intestinal resection piece concluded to a metastasis of a stromal gastro-intestinal tumor. DISCUSSION:

Gastro-intestinal stromal tumors are frequent neoplasms, but intracranial metastases of these neoplasms are extremely rare. Abdominal symptomatology frequently reveals the pathology. However, extra digestive symptoms may in rare cases disclose intestinal tumors. Intracranial metastases of gastro-intestinal stromal tumors are generally solitary mainly supratentorial. Infratentorial metastases are very uncommon. Management of gastro-intestinal stromal tumors is based on surgical removal of the tumor. Adjuvant treatment consisting on chemotherapy and radiotherapy is subject of debate. CONCLUSIONS:

Gastro-intestinal stromal tumors are frequent neoplasms with a high metastasizing potential on liver and peritoneum. Brain metastases are extremely rare and the prognosis is worse when they are present. Surgery remains the main treatment for the primitive and the secondary lesions [3)].

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A 64-year-old woman presented with an enlarging palpable mass over her right eye. Magnetic resonance imaging revealed an enhancing T1-hypointense, T2-hyperintense right frontal calvarial lesion with lytic features on computed tomography. Pathology confirmed metastatic GIST to the skull with dural involvement. Molecular profiling revealed a mutation in exon 11 of KIT in her primary tumor, while the skull metastasis harbored an additional mutation in exon 17 associated with acquired drug resistance. CONCLUSION:

We review the epidemiology of GIST metastases and discuss potential reasons for its rare presentation to the CNS. Additionally, we highlight the diagnostic and prognostic value of molecular profiling for metastatic GIST, as well as its influence in arbitrating targeted molecular inhibitor therapy. Evolving molecular signatures, associated with treatment resistance, may play a pivotal role in future integration with multimodality treatment strategies for CNS GIST [4)].

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An 80-year-old man presented with nausea and vomiting with disturbance of consciousness. Magnetic resonance imaging (MRI) revealed tumor in the cerebellar vermis causing obstructive hydrocephalus. The patient subsequently underwent midline suboccipital craniotomy, and the tumor was totally removed. Immunohistochemical analysis showed tumor cells positive for c-kit and CD34, and cerebellar metastasis of GIST was diagnosed. Postoperative radiotherapy was administered. Following surgery and radiotherapy, the patient developed ileus caused by tumor in the small intestine and underwent laparotomy for tumor removal. Following abdominal surgery, left hemiparesis and consciousness disturbance were noted. Computed tomography showed recurrent large tumor with perifocal edema in the right frontal lobe of the brain. The patient died 3 months after initial craniotomy. Intracranial metastasis of GIST is extremely rare. In cases such as the present, where the condition of the patient rapidly deteriorates and features such as rising intracranial pressure and ileus prevent the use of oral agents, molecular-targeted agents administered by intravenous infusion should be utilized [5)].

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A case of the successful removal of a metastatic GIST in the craniovertebral junction, using an occipital artery to posterior inferior cerebellar artery (OA-PICA) bypass. The patient is a 54-year-old male who underwent his first surgery for a small-bowel tumor at the age of 45 and was diagnosed with GIST. Nine years after his primary diagnosis, the patient suffered from severe neck pain. MRI demonstrated a large demarcated mass adjacent to the right atlas. The right vertebral artery (VA), completely engulfed by the tumor, showed a narrowing and ended in the PICA. Poor collateral blood supply in the right PICA territory was presumed. To prevent ischemic complications, an OA-PICA bypass was performed prior to the tumor resection. After the OA-PICA bypass, the tumor associated with the right VA was successfully removed, and the patient was discharged without any neurological deficits [6)].

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The case of multiple brain metastases from jejunal GIST. The brain metastasis in the right prefrontal gyrus was detected 20 months after resection of the primary lesion when left hemiparesis began although the patient was on imatinib. Then the patient began taking sunitinib instead of imatinib, and the lesion shrunk and the symptom improved. However, after the dose reduction due to side effects, a new brain metastasis was found and this time, stereotactic radiation was effectively done. Sunitinib is one of the promising receptor tyrosine kinase inhibitors used for metastatic renal cell carcinomas or imatinib-refractory GISTs. Sunitinib is thought to penetrate blood-brain barrier, and recent reports indicate effectiveness to brain metastasis. To the authors' knowledge, this is the first report of brain metastases from jejunal GIST responding to sunitinib therapy [7)].

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Report on a patient with malignant GIST who developed a bone lesion, mimicking spinal metastasis on both MR imaging and FDG-PET/CT. Corpectomy and anterior fusion was performed, but the pathology report was consistent with bone marrow necrosis. Radiological and clinical similarities made the distinction between metastasis and bone marrow necrosis challenging for the treating physicians. Instead of radical surgical excision, more conservative methods such as percutaneous or endoscopic bone biopsies may be more useful for pathological confirmation, even though investigations such as MR imaging and FDG-PET/CT indicate metastatic disease [8].

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A 60-year-old male with a history of stomach GIST who presented with ataxia 2.5 years after a partial gastrectomy. MRI revealed enhancing masses in the cerebellum and frontal lobe. A suboccipital craniotomy revealed metastatic GIST. With subsequent radiosurgical boost to the resection cavity and frontal lobe lesion, the patient is doing well 15 months postoperatively. To our knowledge, this is one of only a few reports on cerebral GIST metastases from the stomach [9].

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A 26-year-old man with 6 years, history of duodenal gastrointestinal stromal tumor (GIST) with liver, peritoneum and lung metastases. He presented with left eye ptosis, diplopia, left facial numbness and a left temporal fossa mass that was confirmed to be GIST with left skull and left orbit metastases. Craniectomy with cranioplasty, tumor excision and decompression were performed. There was an improvement of his visual symptoms and facial numbness. To our knowledge, this is one of the few reports of surgical management of GIST, metastasized to skull and orbit, with good symptomatic relief [10].

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A patient with epidural metastases from a gastrointestinal stromal tumour (GIST) is described. After standard irradiation and surgical intervention, the tyrosine kinase inhibitor STI571 should be considered for treatment of metastatic GIST [11].

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A 68-year-old woman presented with an extremely rare intracranial metastasis from a gastrointestinal stromal tumor (GIST) manifesting as left hemiparesis 2 years after resection of a sacral tumor adjacent to the coccygeal bone. Magnetic resonance imaging revealed an intracranial tumor in the right parietal lobe. Craniotomy was performed to completely remove the tumor. Although the tumor was located extra-axially, only internal carotid angiography showed mass staining. Seven months after surgery, the tumor recurred. Repeat craniotomy was performed to remove the recurrent tumor. Immunohistochemical analysis showed that the tumor cells were positive for c-kit and CD34, and the tumors were identified as intracranial metastasis of GIST. Following the second intracranial surgery, the patient developed severe lower back pain caused by metastatic tumor invading the lumbar spine and ureter. To avoid surgical complications and to reduce tumor volume, imatinib mesylate (Gleevec) was administered. The severe pain was relieved, although the tumor was not reduced. In this case, the extra-axial tumor was fed only by the internal carotid artery [12].

# References


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