

Understanding a Radiology Report

General Thoughts

In patients with GIST, imaging is used for diagnosis, initial staging, restaging, monitoring response to treatment and follow-up surveillance of possible recurrence.

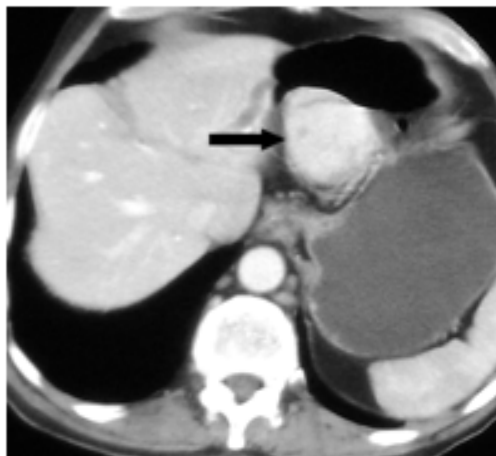
CT scan is the preferred imaging to evaluate GIST tumors because it provides details about tumor size and contiguity to nearby structures. PET scan provides significant value to the standard CT scan, because changes in the metabolic activity of tumors often precede anatomic changes on CT. Although PET scan is not a substitute for CT, it may be used to clarify uncertain findings seen on CT or PET. It may be beneficial for patients who have allergy to IV contrast. MRI usually provides an excellent anatomical definition of liver metastases. Combined PET-CT scans facilitate both anatomic and functional tumor evaluation in one step. This combination provides a more accurate assessment and prediction of the quality of response to treatment.

Adequate and high-quality imaging studies are crucial to good management of GIST, because the presence of metastatic disease may change the management of primary lesion and the overall approach to the patient's disease management.

Reading the Findings

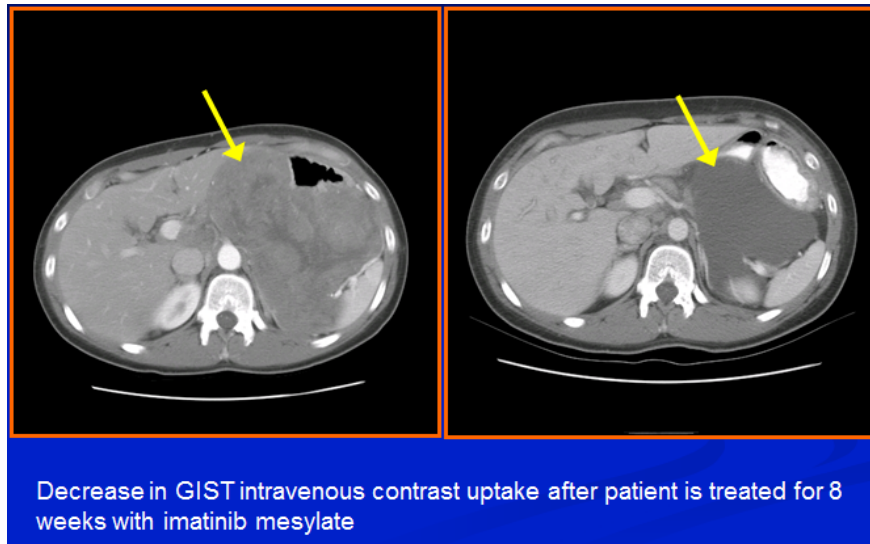
Initial Evaluation

Typically, a GIST is a solid hyperdense-enhancing mass on CT. However, large GISTs (>10) are often more complex because of necrotic, hemorrhagic, or degenerating components. At presentation, the mass is usually exophytic (tending to grow outward beyond the surface of the epithelium), and the origin maybe difficult to identify when the mass is very large.



Follow-up/Surveillance

When GIST responds to treatment it generally becomes homogenous and hypoattenuating (hypodense) and the tumor vessels and solid enhancing nodules disappear. Such changes represent a good prognostic value. This represents a favorable effect of therapy on the disease, even in the absence of anatomic shrinkage of tumor bulk. Sometimes the outside dimensions of a tumor mass may not reflect tumor activity; however the degree of enhancement is indicative of tumor behavior. Decreased density on CT with contrast of responding GISTs indicates response to therapy and correlates with tumor necrosis or with cystic or myxoid degeneration (the connective tissues are replaced by a gelatinous or mucoid substance.)



False Progression

Response does not equal reduction in tumor volume. The idea that response cannot be equated with a reduction in tumor volume is a very important change in the way we are used to seeing responses to cancer treatment. We are used to thinking that to have a response we need the patient's tumor to shrink, and that the tumor increases in volume when progression occurs. This is probably not true for the treatment of GIST with imatinib, and is probably not true for other targeted agents in other cancers. Response does not necessarily mean reduction in tumor volume, and progression does not necessarily mean a volume increase.

Some tumors that are dying can actually swell and appear larger on a CT scan. This is not progression, but tumors that are responding to treatment. These tumors will usually have a change in density (less dense) and appear darker on a CT scan and the border may become better defined. A PET scan of this type tumor will typically show decreased glucose uptake.

Some tumors that have a density very close to the surrounding liver may not show up on an initial CT scan.

Treatment with Imatinib can cause these tumors to become less dense and they will then show up on later CT scans. This can be very misleading as they appear like new tumors.

