

## **MSCT in GIST patients with hepatic metastases treated with new generation tyrosinkinase inhibitors: comparison between density and dimension.**

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## Purpose

Gastro-Intestinal Stromal Tumors (GIST) are the most common tumors of non-epithelial gastrointestinal tract. Since the introduction of molecular targeted drug, there has been increasing concern about the use of the traditional tumor response criteria. Aim of this study is to compare diagnostic effectiveness of functional vs. dimensional criteria, measured by MSCT after contrast medium (c.m.) administration, in the follow-up of GIST metastatic patients receiving new generation Tyrosine Kinase inhibitors (TKI).

## Methods and Materials

In the period between April 2011 and March 2012 were evaluated CT scans of six women aged between 45 and 75 with GIST at an advanced stage with the presence of liver metastases. Criteria for inclusion were evidence of disease that was unidimensionally measurable with CT; failure of previous treatment; adequate hepatic, renal, and cardiac function. Exclusion criteria were renal insufficiency (serum creatinine greater than 2 mg/dL), pregnancy and documented allergic reaction to iodinated contrast agent. Patients were observed by MSCT after c.m administration, before start of TKI treatment and after 3 and 6 months. For each patient were identified at least 3 liver lesions as target. For each of them were measured the maximum diameter and the HU densitometric average values in venous phase (by positioning of at least 3 ROI).

## Results

2 patients (33%) showed a partial response, with a dimensional and densitometric lesions reduction. 3 patients (50%) showed stable disease with diameters unchanged although it was a reduction of the lesions density. Only 1 patient (17%) did not respond to therapy, showing after 6 months disease progression with an increase of lesions number.

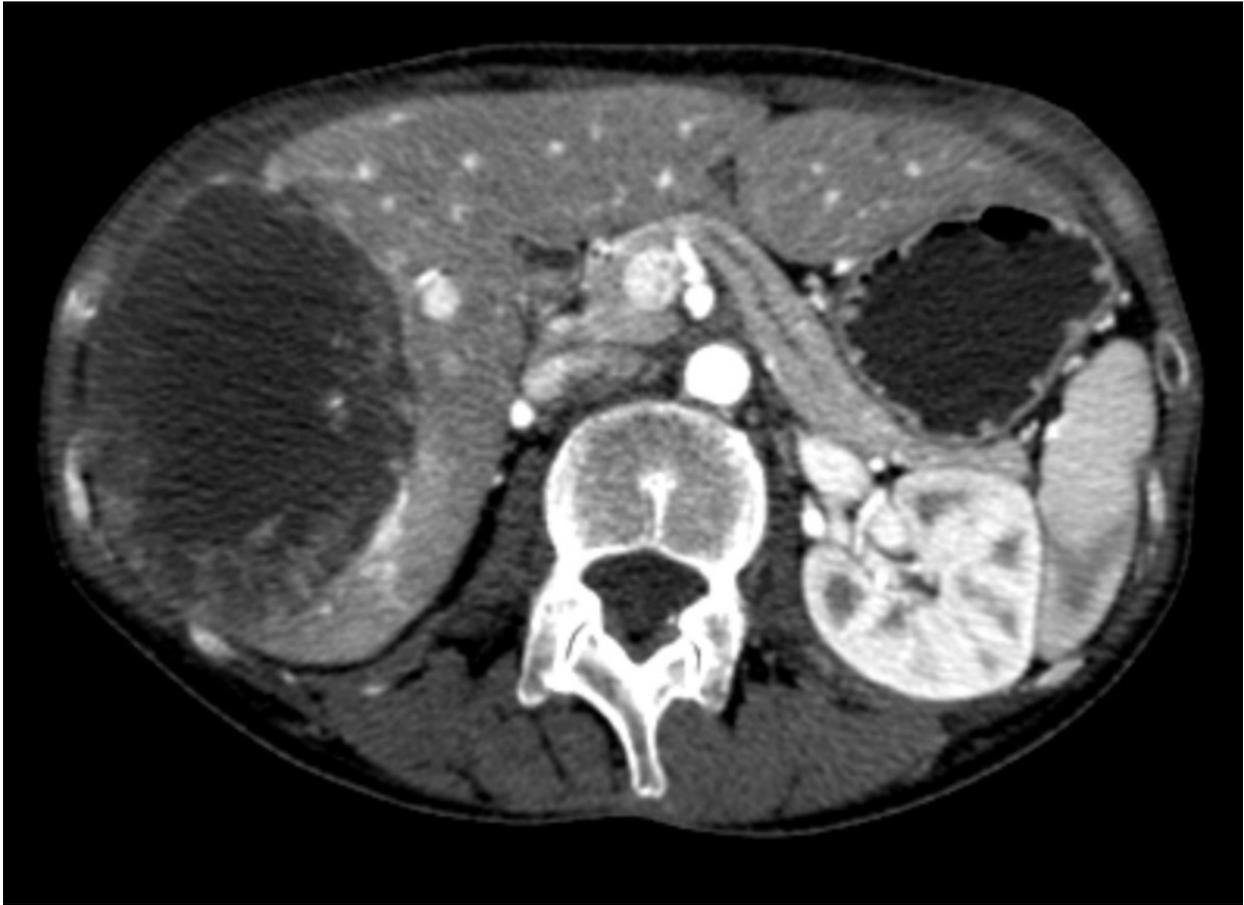
Overall, after 3 and 6 months of treatment we have observed a reduction of the liver lesions total diameter average by 8% and 10% respectively, and a reduction lesions density average by 20% and 26% respectively.

Images for this section:



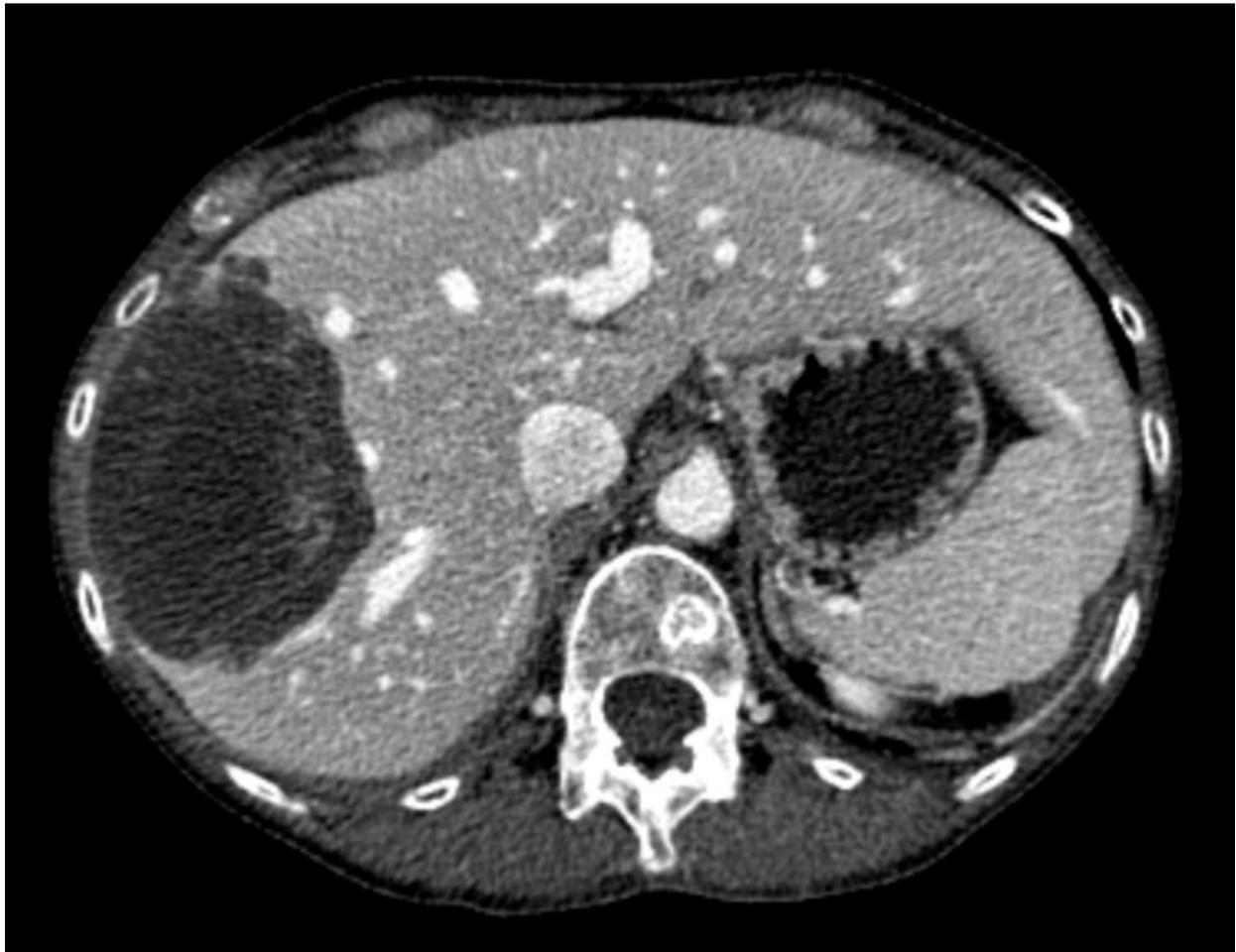
**Fig. 1:** before treatment

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**Fig. 2:** after 3 months

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**Fig. 3:** after 6 months

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		D (%)	HU (%)
pz1	3m	-14,3 → SD	-12,7 → SD
	6m	-20,0 → SD	-12,7 → SD
pz2	3m	-1,5 → SD	-26,4 → PR
	6m	-16,8 → SD	+2,4 → SD
pz3	3m	-10,1 → SD	-13,7 → SD
	6m	-11,6 → SD	-30,1 → PR
pz4	3m	+5,9 → SD	-30,2 → PR
	6m	+6,1 → SD	-24,9 → PR
pz5	3m	-2,0 → SD	-31,4 → PR
	6m	-8,9 → PD (new lesions)	-26,3 → PD (new lesions)
pz6	3m	-18,8 → SD	-23,3 → PR
	6m	-25,6 → SD	-69,8 → PR
TOT	3m	<b>-3,0</b> → SD	<b>-24,0</b> → PR
	6m	<b>-8,0</b> → SD	<b>-27,5</b> → PR

**Fig. 4:** Diameter Vs. Density percentage changes

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## Conclusion

The standard imaging technique in advanced GIST patients should be contrast-enhanced CT. CT is widely available, allows high patient comfort, is cost effective and has a high sensitivity in lesion detection, particularly for liver metastases.

We observed that Gist liver lesion responding to targeted therapy showing myxoid degeneration that is reflected by distinctly hypodense, almost cystic-appearing lesions on imaging.

Consequently, CT lesion density should be considered in assessing response.

Whereby, functional response criteria, incorporating tumor density and using small changes in tumor size on CT, are more sensitive and more precise than dimensional criteria in assessing the response of GISTs to TKI targeted therapies.

Thus, tumor size determined using the sum of the longest dimensions was not reliable and underestimated the tumor response during the early post treatment stage. By the way, the mean tumor density had decreased significantly 3 months after treatment compared with the pretreatment values.

Authors believe that a larger number of cases will consolidate these findings.

## References

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