

# Tc-99m MIBI Imaging in Lymphomas: Comparison with Tl-201 and Ga-67 Scintigraphy

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## Abstract

Tc-99m MIBI has recently been used in the functional imaging of various tumors. This prospective study was performed to evaluate the role of Tc-99m MIBI imaging at the time of the initial staging, assessment of treatment response, follow-up studies and surveillance in Hodgkin's and non-Hodgkin's lymphoma. 25 patients (14 with Hodgkin's and 11 with non-Hodgkin's lymphoma) underwent 32 studies. The patient's age range was 19-73 years, with a mean age of 41.7 years. All patients underwent whole body planar imaging following intravenous injection of 20-25mCi Tc-99m MIBI. Comparative imaging with 3mCi Tl-201 and 10 mCi Ga-67 injection was done. Clinical, radiographic, and biopsy correlation was obtained in all cases.

	Tc-99m		Tl-201		Ga-67	
Tc-99m MIBI vs Tl-201 vs Ga-67	Sens	Spec	Sens	Spec	Sens	Spec
Hodgkin's Lymphoma	0.38	0.83	0.75	0.92	0.86	0.46
Non-Hodgkin's Lymphoma	0.37	0.85	0.58	0.92	0.78	0.50

When Tc-99m MIBI was compared to Tl-201 in Hodgkin's lymphoma, the sensitivity of Tl-201 was superior to Tc-99m MIBI. When Tc-99m

MIBI was compared to Ga-67 in Hodgkin's lymphoma, Ga-67 had better sensitivity, whereas MIBI had higher specificity. There was no

significant difference among any of the parameters in non-Hodgkin's lymphoma. There was a limitation of Tc-99m MIBI scintigraphy with respect to imaging of the abdomen and pelvis as compared to Ga-67. In addition, there were two false positive studies with Tc-99m MIBI in the supraclavicular and inguinal area. In conclusion, we find that Tc-99m MIBI is more specific than Ga-67 in the detection of the persistence or recurrence of tumor in Hodgkin's lymphoma; however, both Tl-201 and Ga-64 scintigraphy show more sensitivity in detecting the tumor viability. Functional imaging with these three isotopes play a significant role in the management of Hodgkin's lymphoma.

### **Introduction**

Thallium-201 and Gallium-67 scintigraphy have been used in diagnosis of Hodgkin's and non-Hodgkin's lymphomas. Tc-99m MIBI is a tumor imaging agent which can be used at the time of initial staging, assessment of treatment response, follow-up studies and surveillance in Hodgkin's and non-Hodgkin's lymphoma. This prospective study evaluated the role of Tc-99m MIBI in Hodgkin's and non-Hodgkin's lymphomas.

### **Patients and Methods**

Twenty-five patients (14 with Hodgkin's and

11 with non-Hodgkin's lymphoma) underwent 32 studies. The patient's age range was 19-73 years, with mean age of 41.7 years. There were 20 studies on Hodgkin's and 12 on non-Hodgkin's lymphoma. Five patients underwent pre therapy and 27 patients underwent post therapy examinations. The patients underwent comparative imaging with 3.0 mCi Tl-201 and 10mCi Ga-67 and 20-25mCi Tc-99m MIBI. Clinical, Radiographic, and biopsy correlation was observed in all cases.

The Student t-test was performed to compare the effectiveness of the three isotopes. The p value < 0.05 was considered significant.

### **Results**

In Hodgkin's lymphomas, both Tl-201 and Ga-67 scintigraphy showed better sensitivity than Tc-99m MIBI. The specificity of Tc-99m MIBI was similar to Tl-201 but superior to Ga-67 scintigraphy. In non-Hodgkin's lymphomas, there was no significant difference among any of the parameters. There was a limitation of Tc-99m MIBI scintigraphy with respect to imaging of the abdomen and pelvis as compared to Ga-67. In addition, there were two false positive studies with Tc-99m MIBI in the supraclavicular and inguinal area.

Tc-99m MIBI vs Tl-201 vs Ga-67	Tc-99m		Tl-201		Ga-67	
	Sens	Spec	Sens	Spec	Sens	Spec
Hodgkin's Lymphoma	0.38	0.83	0.75	0.92	0.86	0.46
Non-Hodgkin's Lymphoma	0.37	0.85	0.58	0.92	0.78	0.50

### Conclusions

Tc-99m MIBI is more specific than Ga-67 in the detection of persistence or recurrence of tumor in Hodgkin's lymphoma. However, both Tl-201 and Ga-67 scintigraphy show more sensitivity in detecting tumor viability. These studies are complimentary to each other and to anatomical imaging to assess tumor viability pre and post chemoradiation therapy.

### References

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