

¹³¹I MIBG Therapy

At Ochsner Medical Center - Kenner

What Is ¹³¹I MIBG Therapy?

¹³¹I MIBG (Meta-Iodo-Benzyl-Guanidine) is a systemically administered radiotherapy used in the treatment of some neuroendocrine tumors. This is a targeted way of bringing radiation to your tumor. An IV infusion delivers the radiation in the form of a radioactive drug, and it goes directly to the tumor sites throughout the body. The radiation effects result from beta radiation which has a mean range in tissue of about 0.5mm. The rest of the radioactivity passes out of your body in the urine.

The objective of ¹³¹I MIBG therapy is improvement of symptoms and stabilization of tumor growth, thus increasing quality of life and prolonging survival.

Indications:

Inoperable metastatic neuroendocrine tumors showing uptake of MIBG such as pheochromocytoma, paraganglioma, neuroblastoma, medullary thyroid cancer, and carcinoid tumors.

Relative Contraindications:

- Pregnancy or breastfeeding
- Life expectancy less than 1 month
- Myelosuppression: Hb < 9, total white cell count < 4.0, platelets < 100
- Rapidly deteriorating renal function – GFR < 30 ml/min
- Total Bili > 3.0
- Unacceptable medical risk for isolation
- Unmanageable urinary incontinence

Drugs likely to interfere with the uptake and/or retention of ¹³¹I MIBG should be withdrawn for 1 to 2 weeks prior to treatment. These drugs include Labetalol, Reserpine, Calcium-channel blockers, Tricyclic antidepressants, Sympathomimetics, and Cocaine. Patients should be established on alternative medication prior to therapy.

Treatment:

¹³¹I MIBG, diluted in 30 ml saline solution, is administered by slow intravenous infusion over 1.5 hours using a lead-shielded infusion system in an isolation hospital room which has been prepared by the hospital's Radiation Safety Officer (RSO)..

Thyroidal uptake of free iodide is prevented by administering oral saturated solution of potassium iodide beginning 24 hours prior to planned administration and continued for 10 days post therapy.

Treatment may be repeated at not less than 12 week intervals, dictated by platelet recovery.

Patients should be encouraged to drink large volumes of fluid following ¹³¹I MIBG administrations.

Because the MIBG used is radioactive, you will need to stay in the hospital for a few days so that you will pass on as little radiation as possible to others.

At various times, a medical physicist will measure how radioactive you are by holding a detector towards you. We will discharge you when the amount of radioactivity in your body has reduced to a specific level consistent with the Nuclear Regulatory Commission's (NRC) guidelines. The majority of patients are discharged after two - three days. When you leave the hospital, you will still be slightly radioactive. In order to keep the amount of radioactivity you pass on to others to a minimum, we will ask you to observe a few precautions (see below).

Side Effects:

- Temporary nausea and vomiting is uncommon, but may occur during the first two days after administration.
- Temporary myelosuppression (depressed bone marrow), which typically occurs approximately 4-5 weeks post-therapy, and return to normal levels by 8-12 weeks. Hematological effects are common in children with neuroblastoma treated with I-131 MIBG predominantly as an isolated thrombocytopenia (low platelet counts), but are less frequent in adults. Bone marrow depression is more likely in patients who have bone marrow tumor involvement at the time of ¹³¹I MIBG therapy and, due to a high whole body radiation dose, in patients with delayed renal clearance. ¹³¹I MIBG therapy is associated with significantly less hematological toxicity in chemotherapy naïve patients (no prior chemotherapy).
- Rarely deterioration of renal function is observed in patients whose kidneys have been compromised.
- Rarely in adults with pheochromocytoma or paraganglioma and children with neuroblastoma, hypertensive crises may be evoked by release of catecholamines, requiring alpha-blockade.
- Hypothyroidism can be seen after inadequate thyroid blockade.

Late:

- Persistent hematological effects (thrombocytopenia, myelosuppression).
- Induction of leukemia has never been reported but cannot be excluded.
- In patients with carcinoid, flushing may occur due to release of serotonin.

Patient Radiation Safety Precautions:

While there are no legal restrictions on your activities, we recommend that you observe the following radiation safety recommendations for one week after your treatment.

- no travel on public transport, including air travel, lasting more than 2 hours.
- avoid crowded public places; try to remain one meter (3 feet) away whenever possible .
- do not sleep in the same bed as your partner.
- no contact with pregnant women.
- Adult visitors may approach the patient for periods of a few minutes at a time, but for prolonged periods they should stay more than 3 feet away.
- It would be a good idea if you could arrange for your very young children to stay with relatives or friends for the first few days after your discharge.
- **Special arrangements may be required for your transport home.**
- You may travel home by public transport if your journey takes less than 2 hours.

- You may travel home by private transport, with a maximum of one other person in the car. You may drive yourself. If you are traveling with someone else, please ensure that you are seated diagonally opposite to the other person.
- Patients should be advised to observe rigorous hygiene in order to avoid contaminating others at risk using the same toilet facility. A double toilet flush is recommended after urination. Patients should wash their hands after urination.
- Patients should be warned to avoid soiling underclothing or areas around toilet bowls for 1 wk post injection. Significantly soiled clothing should be washed separately.

After one week you may resume your normal activities with no radiation precautions.

Preparing For Your Treatment:

- You may not bring personal items into your treatment room, ie, cell phone, computers, etc.
- Hydrate well at home for several days and bring your favorite liquid drink to hospital to drink during your stay.
- Bring books or magazines to read – be cautioned that you may have to leave them here if contaminated with bodily secretions containing radioactive material.
- No visitors will be allowed in your room after treatment. This could be from 1-3 days. You may have contact with your family via hospital phone.
- You will be required to stay in your assigned room after treatment until discharge. You will be able to walk around the room but must remain in bed when hospital personnel enter your room.
- Males and females must use birth control for 6 months after treatment.

If you have any questions or problems with your treatment or aftercare, contact us at 504-464-8500.