

# Hyperthyroidism Therapy Consulation Discussion

1. What is Grave's disease?
  - a. An autoimmune disorder where, for unknown reasons, the body turns against itself.
  - b. There are many symptoms of an overactive thyroid, but most concerning would be:
    - i. the potential for abnormal heart rhythms which could result in heart failure and,
    - ii. the potential for loss of bone which could result in fractures. This is why treatment is so important.
2. Options for Grave's disease therapy
  - a. Surgery – up until the 1960's, surgery was mainstay of treatment for Grave's disease by removing the thyroid gland. Due to anesthesia risks and surgical risks (thyroid is a very vascular organ) and the fact that other non-invasive treatments like antithyroid medication and 131-iodine are now available, surgery has fallen out of favor.
  - b. Antithyroid medication – Propothiouracil(PTU) and Tapazole. Very useful for managing Grave's disease, but does not CURE it. Over half of patients who stop taking the antithyroid medication will see a return of the Grave's disease. Nonetheless, antithyroid medication remains the preferred treatment during pregnancy and in children with Graves.
  - c. 131-Iodine – the most commonly used treatment for Graves. It is iodine in a radioactive form. Since the thyroid gland needs iodine to function, the substituted radioactive iodine enters the greedy overactive Grave's thyroid cells and destroys them.
3. Discuss intent of therapy
  - a. 131-iodine has been used in the treatment of hyperthyroidism for over 50 years and now has much data available regarding its success and side effects.
  - b. 131-iodine is used for treatment to destroy the "overactive" thyroid cells in the thyroid gland in order to eliminate hyperthyroidism permanently. This drug is similar to the drug received for the thyroid scan done earlier but is a much more potent dose.
  - c. Radioactive iodine is taken as a single pill and performed as an outpatient procedure meaning you go home right after you ingest the pill.
  - d. It is painless. Rarely you might experience dry mouth for which a throat lozenger could remedy.
  - e. Radioactive iodine does not work immediately. It will take 6 weeks for the drug to begin working and relief of symptoms may take up to 6 months.

- f. 85% of hyperthyroid patients are no longer hyperthyroid after a single dose. In 10-15% of hyperthyroid patients, a second dose will be required but that won't be decided until the drug has ample opportunity to work (4-6 months).
4. Review side effects of <sup>131</sup>I-iodine
- a. Hypothyroidism
    - i. <sup>131</sup>I-iodine is used to destroy enough of the thyroid gland to CURE the hyperthyroidism. Ideally, damage would be just enough to return patient to normal level of thyroid function, but it is impossible to predict this precise dose. A by-product of this treatment is very commonly hypo-thyroidism.
    - ii. As discussed above, if hyperthyroidism is eliminated, the therapy is deemed a success, even if hypo-thyroidism resulted. To restore normal thyroid function in the event of hypo-thyroidism, simply take a daily pill of thyroid hormone supplement.
    - iii. No matter what radioactive iodine dose given to treat Grave's disease, 5% of those treated will become hypo-thyroid each year after treatment. Over half of all treated will become hypothyroid in 10 years. This is why it is absolutely critical to have regular thyroid blood work annually, at a minimum, for the rest of your life.
  - b. Lack of reported malignancy – there is no increased risk of leukemia, thyroid cancer, or malignancy in general for the doses prescribed for Grave's disease. One's risk of developing cancer is more dependent on your genetic make-up and family history. None of this is altered by radioiodine.
  - c. If thyroid goiter or thyroid ophthalmopathy is present, radioactive iodine may or may not improve these conditions.
  - d. Radioiodine does not cause birth defects, unless you are being treated while you are pregnant. This is why a pregnancy test is required as per hospital policy. As long as one waits 6 months following treatment before trying to conceive, there should be no effect of radioiodine on the fetus.
  - e. Radioiodine can be given to those with seafood allergies or even allergies to IV contrast since those individuals are not allergic to iodine itself (iodine is essential to thyroid function in all of us), but rather to a protein or other ingredient. Moreover, the amount of iodine in an average treatment for Grave's is less than 1 microgram, a very tiny amount.
5. Radiation safety precautions
- a. After you ingest the radioiodine pill, you can go home.
  - b. For the next 2-3 days, most of the pill will head to your thyroid gland but excess radioiodine will leave your body through your bodily secretions. These include, saliva, sweat, mucus, urine, feces, etc.
  - c. Although you need the radioiodine for medical benefits, others you may come in contact with over the next 2-3 days do not require the radiation exposure.
  - d. It is for this reason that some hygiene precautions are recommended to you. These include:

- i. Reduce closeness and contact with others for 2-3 days, even pets (especially pregnant women and small children since they are more sensitive to radiation exposure)
    - ii. Use disposable dishes and cutlery if possible
    - iii. Sleep alone and abstain from sexual activity
    - iv. Wash your bed linens and undergarments separately
    - v. Use a separate hairbrush, comb, towel, and washcloth
    - vi. Flush toilet twice after each use and wash hands very well
    - vii. Wipe telephone mouthpiece with damp cloth after use
    - viii. Drink lots of fluids to help the radioiodine pass through your body faster.
  - e. If you accidentally come into contact with someone, move away as soon as possible. There is no increased risk of malignancy in you and the small amount of exposure you would confer to another is also unlikely to result in any increase malignancy risk. However, radiation exposure that has no benefits is not advised.
  - f. If you are treated on a Friday morning, you would be free of necessary hygiene precautions and can return to work by Monday morning.
6. Need negative pregnancy test and signed consent form from patient.
  7. You must be NPO 2 hours before ingesting pill and 2 hours after. Best time for treatment is 10am. This allows you to eat breakfast before 8am and eat lunch at noon.