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# HEMODIALYSIS TREATMENT IN PATIENTS UNDERGOING RADIOIODINE THERAPY FOR THYROID CANCER

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# Introduction

Treatment for Thyroid Ca. includes:  
Thyroidectomy, Neck Dissection, Radioiodine  
Therapy ( $I^{131}$ )

Precautions includes:

- Patient protection
- Staff protection
- Suitable drainage of the Radioactive dialysate
- Re-qualify the Dialysis machine
- Preparations for emergencies





# I 131 Treatment

- The purpose of the I 131 treatment is to expose the remaining malignant cells after the operation to maximum radiation
- The I 131 is cleared from the body through the kidneys.
- After taking the I 131 pills, patients with healthy kidneys are isolated in their homes.
- Patients with ESRD need to stay in the hospital in an isolated room with lead walls, where they also receive their hemodialysis treatments.



# Background

- Female, age 55
- Hypertension, Bipolar Disorder, Obesity.
- ESRD due to Lithium Therapy.
- Treated with Hemodialysis since December 2008 3 t /w, 4h each treatment.
- During preparations for Kidney transplant a tumor was found in the Thyroid.



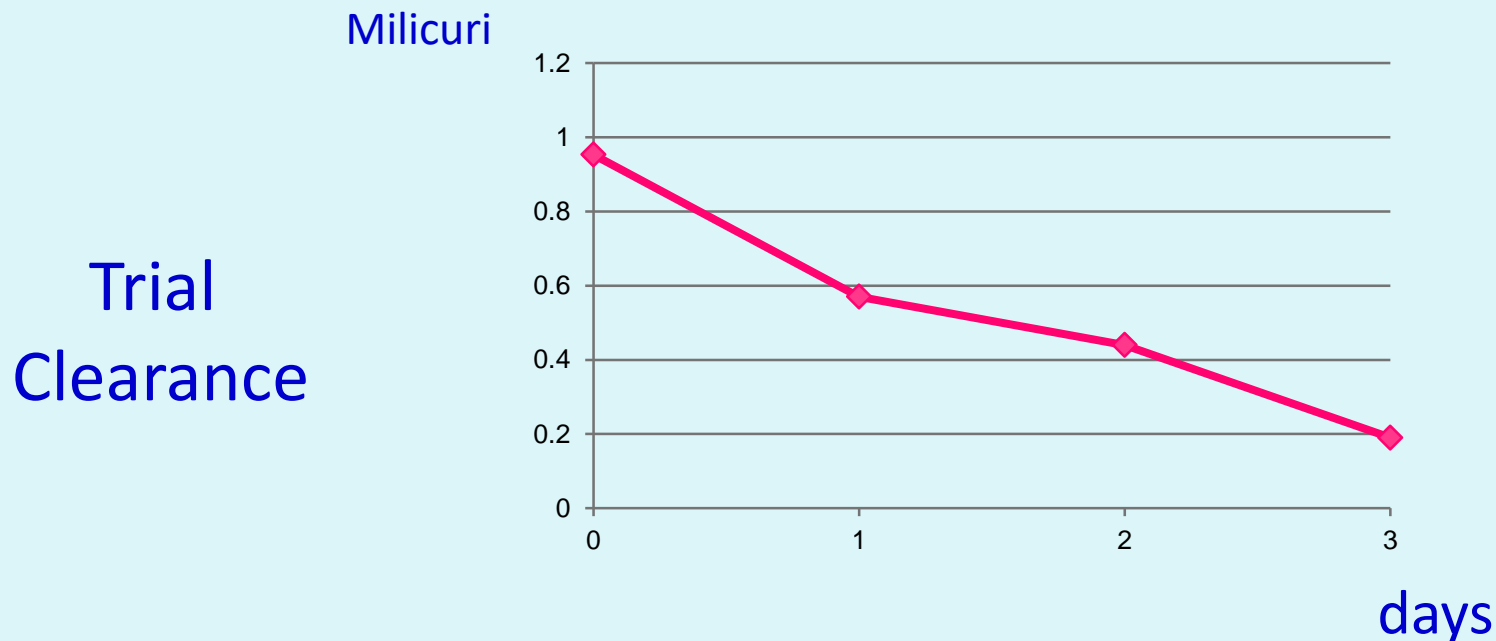
# Background

- U.S. - Suspicious mass in the Thyroid size 10 mm.
- Diagnosis - Papillary Thyroid Carcinoma, numerous positive lymph nodes in neck, stage 3.
- July 2009 Thyroidectomy and neck dissection.
- Feb 2010  $^{131}\text{I}$  treatment



# Patient Protection -Preparations

$I^{131}$  mapping with low dosage of 5 milicuri to identify the clearance time of radioactivity. This helps to decide on the treatment dosage of  $I^{131}$ .





# Treatment

- A full dialysis treatment was done just before the  $^{131}\text{I}$  was taken.
- First dialysis was done 72 hours later.
- Following treatments were performed every second day.
- The patient was released from the hospital after 6 days with a measured radioactivity of 3.1 milirentgen.





# Staff protection

- Usage of lead shield by the dialysis nurse
- Maximum exposure time –2h
- CCTV in the room directed to the patient so the nurse could stay outside the room during most of the dialysis treatment
- Usage of precautions like gloves, hat, gown, mask
- Usage of radiation dosimeter



# Equipment protection

- Dialysis machine and RO were covered with thick nylon.
- The drainage of the dialysate was directly to special drainage of radioactive waste.
- All the contaminated blood tubes were put in the special radioactive waste.
- There was no direct contact between the blood and the machine therefore the residual radiation was minimal
- The room itself was contaminated to the same degree as for patients without ESRD.





# Emergencies prevention

- Psychiatric evaluation of the patient prior to the <sup>131</sup>I treatment to know if the patient is capable of staying in isolation for several days.
- CCTV in the room 24h/d, with adequate private consideration.
- Resuscitation equipment in the room.
- Blood samples and radiation levels were measured daily.



# Conclusions

- A multidisciplinary approach including – Nephrologists, Oncologists, Radiologists, Endocrinologists, Dialysis nurses and Radiation Technicians is obligatory.
- Short term effect of the treatment such as Radiation Thyroiditis, Nausea and Vomiting did not occur. We recommend performing the first dialysis 48h after the  $^{131}\text{I}$  intake.
- Our preparations for staff and equipment protection were excellent and we had no evidence of radioactive contamination



# Thank You

