**131I THERAPY FOR TOXIC ADENOMA IN PATIENT ON HEMODYALYSIS.**

Pilar Orellana1 y Carlos Ubeda2

1 Unidad de Medicina Nuclear. Facultad de Medicina. Pontificia Universidad Católica de Chile. Marcoleta 340. Santiago de Chile.
2 Facultad de Ciencias de la Salud. Universidad de Tarapacá, 18 de septiembre 2222, Arica, Chile

*Keywords: Radiation, protection, hyperthyroidism, radioiodine, dialysis*

**Abstract**

Treatment with radioactive iodine (131I) may be necessary for toxic adenoma of the thyroid in patients with end-stage renal disease (ESRD) who require hemodialysis (HD). Because 131I is cleared mainly by the kidneys in patients with normal renal function, many issues arise as in patients who require 131I treatment but who are on hemodialysis, as radiation safety considerations, contamination of equipment, lines and filter and disposal of wastes. This paper presents a case report of a patient on dialysis that required treatment with 131I.

**Methodology**

87 years old man with ESRD in HD (4hrs/3 times a week) during 8 years. He had hyperthyroidism secondary to a toxic adenoma. 30 mCi of 131I is indicated. During dialysis an individual filter is used. The dialysis room (40 m²) is shared with other 5 patients. The dialyzed liquid is discharged. 'In vitro" study previous to the 131I administration was carried on in order to analyze the eventual contamination of the dialysis machine, using the same kind of filter, with a blood circuit (Qb 250 ml/min) and dialysate solution (Qd 500 ml/min). 10 uCi/5 ml of water was administered at the blood entrance and 8 samples were taken (blood output and input and output of dialysated solution), between 1 and 20 min post injection. Jeringes, lines and filter were taken to the Nuclear Medicine Unit for counting and disposal. Immediately after dialysis 30 mCi of 131I where administered. The patient was admitted in the hospital. The exposition dose from the patient (mR/h) at one meter during the next 4 days was measured. The next HD (new filter) was done 88 hrs after the radioiodine treatment. The dose from the patient and the dialysis machine was determinate as well as the dose received by the nurse and the other patients. After dialysis, lines and the filter were counted. The patient was discharged from the hospital 5 days after therapy.

**Results**

In Vitro-Pre treatment study: Background: 20 uR/h; "venous" output: 43 uR/h. Dialysate solution pre and post filter: 20 uR/h. Lines: 25 uR/h. Filter: 345 uR/h (average).

Therapy: 88 hrs after administration the patient had a 54.5% of the dose. Nurse dose: assuming 15 minutes at 30 cms from the patient for connection and disconnection; was 15 uR. The total dose (4 hrs) for the patients sharing the room was between 17 uR and 39 uR.

**Conclusion**

131I therapy in patients in HD is safe. 131I is trapped in the filter without contamination of the dialysis machine. Radiation for the staff is low. The dose received by patients sharing the room is variable. Proper measurement has to be taken in order to decrease these doses.
References


Presenting author: Dra. Pilar Orellana. Email: pilar@med.puc.cl