

◆ Original Article ◆

A Study for Establishment of High Dose Radioiodine Therapy Patients' Release Standard

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Abstract

This study, which is proceeded in the department of nuclear medicine, aims at preventing unnecessary radiation exposure to the patients and the people near the patients by understanding and presenting the realities about the isolating period for the high dose radioiodine patients after total thyroidectomy in the 7 general hospitals in metropolitan area. Theoretically, the physical half-life of the high dose radioiodine is 8 days. Radioiodine lower than 100 mCi usually is eliminated all in 2 days 1 night considering the biological half-life and the amount of excreting radioiodine. The hospitalization standard of the patients treated with high-dose radioiodine therapy has been established according to the fact above. Investigation of the data and questionnaire from the hospital have proven that some hospitals didn't even measure the acceptable dose because of the faith in the vague data. Besides, the some of those inevitably let the readmitting patients exceeding the acceptable dose be in the general ward, not in the isolation ward, because the number of the isolation rooms is relatively smaller than the patients. Thus, we want to contribute that patients understand the realities and the hospitals consider the relevant problem actively so that the problem will be settled by this journal.

Key word : Nuclear medicine, High dose radioiodine, Thyroidectomy, Therapy

I. Introduction

High dose radioiodine therapy is very important process to treat secondary thyroid cancer and to ablate remaining thyroid tissue after being diagnosed as a thyroid cancer and having surgical

thyroid total thyroidectomy.^{1~3} It could cause secondary radiation exposure to patients and the people who neighbor to the patients of high dose radioiodine therapy when using high dose radioiodine above average 100 mCi at once, so a high dose radioiodine therapy patient must be isolated in an isolation room until meet available dose(5 mR/hr) is below the standard.⁴

The recent revitalization is increasing because of the number of thyroid cancer patients, but the facilities which isolate high dose radioiodine therapy patients are insufficient, that is why patients who need to get high dose radioiodine therapy are waiting 4 to 5 months to get total

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thyroidectomy.^{5~8} According to the recent situation, some hospitals are recommended to have counterplans to be advisable, because they must keep the patients from unnecessary radiation exposure.^{9~10} However, some hospitals release high dose radioiodine therapy patients even if they exceed available radiation exposure level. We decided to visit 7 general hospitals which have over 1000 beds and survey their realities about the process of hospitalization and discharge to give exact information. It may improve the way to take care of the patients who exceed available radiation exposure level.

II. Material & Method

1. Subjects

7 general hospitals which have over 1000 beds and operate high dose radioiodine therapy near the metropolitan area. The survey period was July 2010~August 2010.

2. Methods

First, we make a questionnaire that includes information about hospitalization and discharge standard and operation of isolation rooms. Second, we visit objective hospitals and meet the

persons directly who handle this part. Third, we get the information and analyze the data(Fig. 1).

III. Result

1. The results of visiting hospitals

We have surveyed 7 general hospitals near the metropolitan area, 5 of them release the patients who exceed available radiation exposure level without any counterplans. Among the 5 hospitals, 2 of them don't measure available radiation exposure level. Only 2 hospitals don't release the patients who exceed available radiation exposure level, but they don't use isolation rooms to rehospitalize. They use general wards to rehospitalize the patients(Table 1).

Among 7 general hospitals in metropolitan area treating with the radioiodine therapy, 1 hospital operated 10 wards, which is the most, the other operated 4, and the rest operated 2 wards on the average.

For the number of the patients in one week, the hospital operating 10 wards admitted 20 patients, which is also the most, the hospitals operating 2 wards on the average admitted 4 to 5 patients on the average, but the hospital operating 4 wards admitted 16 patients.

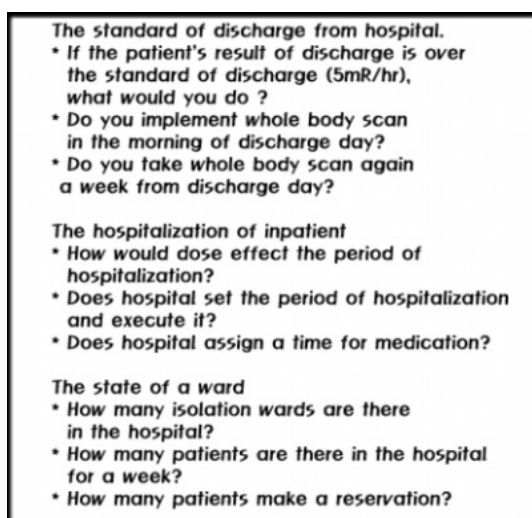


Fig. 1. Questionnaire we used

Table 1. The results of surveying isolation rooms

Hospitals	The number of isolation rooms	The number of weekly patients
A	10	20
B	4	16
C	2	6
D	2	5
E	2	5
F	2	4
G	1	2



Fig. 2. Isolation ward



Fig. 3. General ward

2. The comparison of wards

In the isolation ward, there are the description table telling what the high-dose radioiodine therapy is and what the patients should be careful of, and some electric device and washroom for patient's convenience. The isolation ward, unlike general ward, is shielded from radioactivity in order to reduce the damage to outsiders(Fig. 2, 3).

There are 5 hospitals measuring the exposure dose in the morning of the day of leaving the hospital, and the rest 2 hospitals let the patient leave without any measurement. There are only 2 hospitals letting the patients, whose the acceptable exposure dose is exceeded, be hospitalized again, and furthermore the 2 hospitals readmit the patients in the general wards, not in the isolation wards(Table 3).

Table 3. If they use a isolation room to rehospitalize

Hospitals	If hospitals rehospitalize the patients?	If hospitals use isolation rooms?
A	X	X
B	O	General wards
C	X	X
D	O	General wards
E	X	X
F	X	X
G	X	X

3. Days of hospitalization according to the exposure dose.

It has shown that the patients exposed lower than 100 mCi need to be hospitalized for 2 days 1 night, and those exposed higher than that need to be taken to the hospital for 3 days 2 nights.

IV. Discussion

Since 1940, radioiodine has been used to treat thyroid diseases. It is normally safe, because it only affects to thyroid tissue and hardly affects to peripheral organs. There is a rule to isolate high dose radioiodine patients in special rooms which can be shielded from radiation until the patients get available dose(5 mR/hr) below. The period to get proper available dose usually takes 2 nights and 3 days or 3 nights and 4 days. As we surveyed, the first case is more often than the second case.

There is one more important rule about releasing patients which emphasis the care after patients go back their home. The patients must keep the rule of following the direction from a doctor for a while. There is one more step to examine the patients one week after discharging to make sure the amount of radiopharmaceutical. The most important step is to confirm the patients situation according to the level of available radiation exposure. It is the reality that

suspected faith on statistics intimidate the safety of patients and people around. All hospitals must keep the rule about taking care of high dose radioiodine patients to make sure that they are safe. We found out the reason of lack of the safety. The reason why hospitals are unsafe about high dose radioiodine patients is short of isolation rooms. The profit of isolation wards is less than general wards that is why hospitals don't make additional isolation wards even though the patients are waiting 4 months or more. They also don't make spare isolation wards for the patients who exceed available radiation exposure level. The main purpose of hospital is to make sure patients' safety. These problems could disappear if the hospitals make more isolation rooms to get the faith of the hospitals. There is a possibility that this study has the restriction on statistical propriety because this study reflects only data of seven hospitals located in the metropolitan area among thirty hospitals that can isolate a high dose radioiodine therapy patient.

V. Conclusion

Some general hospitals among we surveyed release the patients who exceed available radiation exposure level without any counterplans. They also have lame post care to the patients as we expected. Hospitals have to get more patients in order to make more earnings. They must rehospitalize the patients who exceed available radiation exposure level by atomic law. It is the reality that hospitals release the patients without rehospitalization, because of the waiting patients. If the hospitals release the patients who exceed available radiation exposure level, it cause unnecessary secondary radiation exposure to the family member. So, the hospitals must persue the safe operation by making more isolation rooms for those who exceed available radiation level.

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