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Views of A University Hospital's Health Personnel on Radioteraphy

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ABSTRACT

Purpose: This study was conducted in order to examine the views of health personnel, who work in a university hospital, on radiotherapy. **Material and Method:** This study universe was consisted of health personnel that work in a university hospital and volunteered for the study. In the research data was collected with a survey form which was formed by the researcher as a result of literature search. **Findings:** When the opinions of workers of oncology clinic, workers who have cancer relatives and other personnel who was far from oncology disease, on the activity of radiotherapy were compared, it was determined that there is a significant difference between them and personnel who work in oncology service or have relatives that have cancer believe the activity of radiotherapy more ($p<0, 05$). However between same groups, when seeing radiotherapy as a treatment choice situation and views on radiotherapy's harm on environment were compared, no significant meaningful difference was found ($p>0,05$). **Result:** As a result, it was determined that a significant difference was found between the views on radiotherapy of health personnel that provide service to oncological patient or have patient as a relative and the ones that who did not encounter or rarely encounter with this kind of patients. In addition, it was seen that personnel do not have adequate information about the harm of radiotherapy on environment.

Keywords: Radiotherapy, radiation, cancer, health personnel, nursing

Introduction

Treatment ways of cancer are chemotherapy, bone marrow transplantation (BMT), stem cell transplantation, surgical treatment and radiotherapy, and according to patients' individualistic characteristic and disease status, one of these methods or few are in usage in the treatment. With this treatment methods, increase in the life time of patients and control of the symptoms that come out as a result of treatment and more eligible life are aimed [1,2]. Approaches to treatments require long term experiences and following of the recent advances. National and international work cooperation, sharing experiences, usage of joint approaches in treatment, research and data collection are gaining importance [3].

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Radiotherapy: Radiotherapy is a treatment method that ionized beam or atomic particles are used in the treatment of cancer and rarely non-cancer diseases [4,5]. Radiotherapy is a local-zonal treatment way that used as alone or in combination with other treatment modalities with curative or palliative purpose [6]. Local control, improvement in survival duration and life quality is aimed with radiotherapy. As different from external irradiation, brachytherapy which is an internal irradiation method is used as an intrabronchial treatment especially used with palliative purpose. In recent years, technical advances in radiotherapy implementation (three dimensional conformal radiotherapy, density adjusted radiotherapy, stereotaxic radiotherapy etc.) enable the application of radiotherapy with lower toxicity and on smaller areas [7].

Known Facts and Wrongs about Radiation: Cancer treatment with radiation came out first right after presence of radioactive substances, with the appearance

of effects that found on the researchers who deal with these substances. Foresight of radiation damage that can make same effects on the tissues with cancer as it did on skin and removal of cancer laid the foundation of this science branch. For many years, as parallel to the advances in biology, radiation effects in organ, tissue and cellular level were tried to explain [8].

Early Side Effects of Radiation: Early side effects related to radiotherapy generally show up during treatment and right after. In the few week-month following treatment, seen side effects are called as subacute effects. In early side effects, as a result of reproduction of stem cells, recovery is seen and in late side effects mainly turnaround is not a matter of question [7].

Skin and subcutaneous tissue: Skin reactions are most seen side effects that result of external irradiation in various degrees. In basis, most affected tissue is epithelial tissue. It can be observed as in type of erythema, edema, dry desquamation, wet desquamation, ulceration and necrosis.

Central Nervous System: Depending on inflammation that develops in early stage of radiotherapy irradiations and because of increase in inside head pressure depending on edema, headache, nausea, vomiting, sleeping tendency, weakness can be observed.

Thyroid: During central nervous system or head-neck irradiation, thyroid dysfunctions due to pituitary or thyroid gland injury may develop.

Lung: Lungs are the most sensitive organs to radiation. Due to the lung irradiation in early stage findings such as cough, increase in shortness of breath and phlegm can be seen.

Gastrointestinal System: The epithelial cells covering the digestive system mucosa are the cells most sensitive to radiation. Because of this reason from the first treatments, nausea, vomiting, diarrhea, etc. complaints from gastrointestinal symptoms develop. In the oral area irradiations, mucositis findings are seen [7].

Protection from Radiation during Radiotherapy

Humans are exposed to inevitable radiation from natural or artificial sources continuously during their lives. The radon gas from the soil, the various radioactive substances in the nutrients and the cosmic rays can be examples of natural radiation. X and gamma beams that used in medicine, nuclear plants and radioactive isotopes that in use in consumer products and produced artificially are the artificial radiation sources. Major part of exposed radiation from artificial radiation sources come from artificial sources that are used in medical applications [9].

1. Supervised Areas: Signs indicating the information, symbols and colors necessary to clearly indicate the magnitude and properties of the exposure hazard to radiation must be existed. Warning signs that show the necessity of limiting the time which will be spent in supervised area and usage of protective wear and tools must be put, usage of personal dosimeter must be controlled and registered. Hematologic examinations of workers are done at least once a year.

2. Surveillance areas: Areas that do not require personal dose measurement but require monitoring of environmental radiation. Because of the reason that devices used in radiotherapy have high radiation potential, radiotherapy centers come first in the places where protection criteria need to be followed precisely. In order to protect environment and personnel who work with radiation, other attendants in hospital, patients, and society individuals who come to hospital for visiting and medical control, criteria that National and International Authorities specified must be applied in radiotherapy centers. In our country, radiotherapy sections are checked by Turkey Atom Energy Institution experts regularly. During the conducting control, examination of facility in physical aspect, measurement of radiation levels in the room where tool exists and around and compliance with radiation safety regulations are controlled [10].

Materials and methods

This study was conducted as to be definitive, in order to determine the views of health personnel in university hospital on radiotherapy, between the dates of 25th February- 27th April 2016. This study sample was consisted of 147 health personnel that work in 8-16 day shift and 16-08 night shift between 25th February and 27th April. In the collection of data, question form that developed by researcher and consists open end questions which will be determine the socio-demographic data of patients and views related to radiotherapy, was used. In order to conduct the research, Malatya Scientific Researches Ethical Committee's approval and written permission from university hospital radiation oncology department were taken. In addition, before the collection of data, purpose of the study was explained to the patients and verbal permissions were taken. Data analysis was done with SPSS program and number-percentage, average distributions were collected and normal distribution suitability for evaluation of socio-demographic variables and views on radiotherapy, Kolmogorov-Smirnov test was done. In the statistical analysis, Chi-Square test were used in appropriate places and $p<0,05$ value accepted statistically meaningful. In the analysis, IBM SPSS Statistics 22.0 program was used.

Findings

Table 1: Distribution of Health Personnel According to Their Descriptive Characteristics

Socio-demographic characteristics	Number (n)	Percentage (%)
Gender		
Male	43	29.3
Female	104	70.7
Marital Status		
Married	104	70.7
Single	41	27.9
Divorced	2	1.4
Education Level		
High school	23	15.6
Associate degree	27	18.4
Bachelor's degree	66	44.9
Master's degree	31	21.1
Chronic Disease		
Yes	31	21.1
No	116	78.9
Cancer Patients		
Yes	3	2.0
No	144	98.0
Work status in Oncology Clinic		
Yes	33	22.4
No	114	77.6
Total	147	100.0

When the descriptive characteristics of health personnel were examined, it was determined that age average of personnel was 32, minimum age was 19 and maximum was 50, 29.3% of them were men and 70.7% were women and 70.7% were married, 15.5% were high school, 18.4% are associate degree, 44.9% were bachelor and 21.1% were master graduates and 21.1 % of them have a chronic disease and 2% of them were cancer patient and 22.4% worked in oncology clinic or still working.

Table 2: Proximity of Healthcare Staff on Oncology and Ideas about RT

Variables	Number (n)	Percentage (%)
Oncology Patient Observation		
Everytime	60	40.8
Sometime	45	30.6
Rarely	23	15.6
Never	19	12.9
Status of Having a Relative that has cancer		
Yes	69	46.9
No	78	53.1
Belief in RT activity		
Yes	66	44.9
No	6	4.1
Partially	54	36.7
No idea	21	14.3
Treatment Methods		
RT	119	81.0
CT	124	84.4
Surgical Treatment	44	29.9
Immunotherapy	3	2.0

It was determined that 40.8% of health personnel who included to study, were provided caring to oncology patients in a period of career process, 46.9% of them have relative that has cancer, 44.9% believe that

radiotherapy is effective in cancer treatment, however 4.1% do not believe this activity and 36.7% believe the activity partially. When health personnel requested to write cancer treatments methods that they know, it was determined that 81% have known written radiotherapy, 84.4% have known chemotherapy, 29.9% have known surgical method and 2% have known immunotherapy method.

Table 3: Opinions of the Health Personnel about Radiotherapy's Harm on Environment

Variables	Number (n)	Percentage (%)
Harm on Environment		
Yes	48	32.7
No	35	23.8
Partially	41	27.9
No idea	23	15.6
Harms on pregnant workers		
Yes	27	18.5
No	94	64.4
No idea	26	17.1
Isolation		
Yes	67	45.9
No	41	28.1
No idea	39	26.0

When the questions related to harms of radiotherapy on environment asked to health personnel, it was determined that 32.7% of them think it damages the environment, 64.4 % think pregnant women should not work in department where this application is implemented, 45.9 % think patient who was implemented radiotherapy must be isolated.

Table 4: Impact of Socio-Demographic Characteristics of Health Personnel on Opinions about Radiotherapy

Variables	Is Radiotherapy an Effective Method?	Is Radiotherapy an Option?	Is radiotherapy harmful to the environment?
Workers in Oncology Clinic	0.009	0.219	0.249
Cancer Patient Relatives	0.002	-	-

* Chi-Square Test ($p<0.05$)

When the ideas of oncology clinic workers, the ones who have cancer relatives and other personnel who are far to oncology disease among volunteered health personnel, were compared, it was determined that there is a meaningful difference and workers in oncology clinic or individuals who have cancer relatives believe the activity of radiotherapy more. ($p<0,05$). However, when seeing radiotherapy is a treatment option status and views on harm of radiotherapy on environment compared, no meaningful difference was found ($p>0.05$).

Discussion

Radiation is commonly used in hospitals with a diagnosis and treatment purpose. Microwave ovens used in houses, radio waves, ultrasonography used frequently in pregnancy follow-up contain radiation that non ionized. Non ionized radiation negative effect on fetus was not found [11]. Inspections and treatments such as ionized radiation (X and gamma beams), nuclear medicine, Positron Emission Tomography (PET), radiotherapy, angiography are used [11]. In radiation oncology area, there are few studies related to nurse role are existed. Generally in radiation oncology, nurse, doctor, physicist and dosimetrist who know technical aspects of the treatment and the well-trained professionals participate. [12]. With the thought of radiotherapy requires technical feature, limited numbers of radiotherapy nurses are charged for patient care in this area [12,13]. In this study which was conducted with 147 health personnel who work in Inonu university Turgut Ozal Medicine Center, information of workers on radiotherapy and their views were evaluated. It was determined that 40.8% of workers provided caring to oncology patients in a stage of their career process, 46.9% have cancer relatives, 44.9% believe that radiotherapy is effective in cancer treatment however, 4.1% do not believe this activity and 36.7 % partially believe the activity. However it was seen that, health personnel that have cancer relative or worked in oncology clinic have more trust the activity of radiotherapy.

Cells which are most sensitive to ionized radiation, are fast-dividing cells in the mitotic phase. On the one hand, the growth of the embryo and fetus with rapid

cell divisions occurs while the development of various organ structures with differentiation events takes place. Because of this reason, embryo and fetus are very sensitive to radiation during all prenatal development period. Ionized radiation that exposed in prenatal stage may cause intrauterine death, organ anomalies, growth retardation and mental retardation, leukemia, solid tumors and genetic anomalies. Most important factors which determine the effects of radiation on development process are radiation exposure to preimplantation, organogenesis and stage of fetal exposure, dose and dose rate of fetal development. That's why radiation workers whose pregnancy determined, work in surveillance area [10]. In conducted study, when the questions related to harms of radiotherapy on environment asked to health personnel, it was stated that 32.7% of them think it damages the environment, 64.4 % think pregnant women should not work in department where this application is implemented, 45.9 % think patient who was implemented radiotherapy must be isolated. It was seen that information of most of health personnel who included in study, is wrong or inadequate in this area.

Result and Suggestions

As a result, it was determined that a significant difference was found between the views on radiotherapy of health personnel that provide service to oncological patient or have patient as a relative and the ones that who did not encounter or rarely encounter with this kind of patients. In addition, it was seen that personnel do not have adequate information about the harm of radiotherapy on environment. Inclusion of radiotherapy activity, non ionized radiation, ionized radiation and protection ways to in service training programs is suggested.

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