

1st Department of Radiology, Medical University of Lublin

ELŻBIETA CZEKAJSKA-CHEHAB, PIOTR PRZYBYLSKI,
MARCIN PANKOWICZ, MARIA KORZEC, ANDRZEJ DROP

*The problem of ionizing radiation exposure of the radiologists
in the opinion of students of Medical Faculties
of the Medical University of Lublin*

Ionizing radiation exposure is common in different diagnostic procedures in radiology. Knowledge and conventional wisdom of X-ray exposure consequences is necessary to avoid and protect from post exposure short- and long-term side-effects. General opinion about X-ray exposure in society is difficult to establish because of different relations with radiologists during diagnostic procedures and not well estimated knowledge level about the X-ray-related health risk. The aim of our study was to find out medicine students' opinion on ionizing radiation exposure in a radiologist speciality.

MATERIAL AND METHODS

The studied group consisted of 88 (30 M, 58 F) medicine students of 1st year – group 1 (G1) and 92 (33 M, 59 F) of 5th year – group 2 (G2). All of them were students of the Medical University of Lublin. The mean age was 19.2 in G1 (range 18–21) and 23.2 in G2 (range 23–26). Data from 180 standardized questionnaires conducted in 2006 were analysed. Each questionnaire consisted of 24 questions and was divided into four parts. The introductory part consisted of questions about sex, age and place of origin (town, city, and village). The first part concerned contact with radiology as a patient – performed examinations, knowledge about risk of X-ray exposure gained during studies. The second part concentrated on respondents' fears related to the use of ionizing radiation during diagnostic procedures. In the third part students were asked about radiology as a study subject – duration of training, the best time to begin the subject, adequate number of hours. The last part referred to a future speciality and a possible choice of radiology as a specialization.

RESULTS

The majority of the respondents from both groups (143 students) underwent X-ray examinations (75.0% – G1, 83.7% – G2) and 85.2% from group 1 and 87.0% from group 2 were aware of potential risks. The commonest procedures were different types of X-ray examinations. The students from the analysed groups represented moderate knowledge of patients' and radiologists' risk during various types of examinations performed with X-ray (Table 1); 28.4% (G1) and 29.3% (G2) of respondents considered choosing radiology as a postgraduate specialization, however 23.9% (G1) and 13% (G2) of them were aware of harmful radiation effects (Table 1).

Table 1. Knowledge of harmful radiation effects

Issue	Answer	G1 n (%)	G2 n (%)
Patient dose during CXR	underestimate	9 (10.2)	4 (4.35)
	correct	31 (35.2)	36 (39.15)
	overestimate	48 (54.6)	52 (56.5)
Relatively maximum patient dose during examination	correct	20 (22.7)	17 (18.5)
	incorrect	68 (77.3)	75 (81.5)
Harmful radiation effects to radiologists	underestimate	6 (6.8)	4 (4.3)
	correct	15 (17.0)	38 (41.3)
	overestimate	36 (40.9)	16 (17.4)
	don't know	31 (35.2)	34 (37.0)
Radiologist-safe examinations (multiple choice question)	USG	45 (51.1)	80 (87.0)
	coronarography	34 (38.6)	8 (8.7)
	bedside x-ray	22 (25)	8 (8.7)
	CT w/o contrast	37 (42)	20 (21.7)
	MRI	23 (26.1)	28 (30.4)

Table 2. Choosing radiology as a planned speciality

Decision Reason	Yes/maybe		Decision Fear/Reason	Yes/maybe		No	
	G1 n=25 n (%)	G2 n=27 n (%)		G1 n=25 n (%)	G2 n=27 n (%)	G1 n=63 n (%)	G2 n=65 n (%)
short workday	13 (52)	10 (37)					
working with modern equipment	13 (52)	13 (48.1)	dangerous ionising radiation	21 (84)	12 (44.4)	34 (54)	23 (35.4)
need for radiologists	12 (48)	19 (70.4)	boring/ unattractive	8 (32)	8 (29.6)	44 (69.8)	51 (78.5)
small amounts of knowledge to become radiologist	3 (12)	1 (3.7)	difficulties in finding a job	8 (32)	3 (11.1)	16 (25.4)	5 (7.7)
appreciation shown by other specialists	2 (8)	1 (3.7)	large amounts of knowledge to become radiologist	2 (8)	5 (18.5)	7 (11.1)	1 (1.5)
low stress/ responsibility	10 (40)	8 (29.6)	no appreciation	6 (24)	5 (18.5)	19 (30.2)	12 (18.5)
radiology is often a key in modern diagnosis	14 (56)	20 (74.1)	possibility of misdiagnosis	15 (60)	13 (48.1)	17 (27)	20 (30.8)

DISCUSSION

Knowledge about harmful ionizing radiation effects should be an intrinsic component of the medical course and every person who has contact with radiological procedures should be aware

of radiation exposure. The results of our study demonstrate that, according to students' opinion, the postgraduate radiology speciality seems to be relatively attractive, despite high cognizance of radiology-related health risks and different knowledge about X-ray exposure in the radiologist profession and during examinations. Most of the students from both groups have little concept of radiation dose during examinations and harmful effect to a doctor. Among the first-year students the knowledge about radiological examinations safety varies. This could suggest their lack of professional learning. The second group of students was characterized by more precise concept of safety of imaging procedures, which is likely to be related to their contact with diagnostic procedures during the clinical part of course. Our findings suggest that radiology is a quite popular speciality among the respondents. Both groups of students rarely considered radiology as their first choice future specialization, but more students of the fifth year decided to choose radiology than those of the first year. Several factors influenced the decision to become a radiologist. In our study the main ones were: short working day (G1 – 57% and G2 – 37%), working with advanced technology equipment (G1 – 52% and G2 – 48%) and radiology as a key in modern diagnosis (56% and 74%) (Table 2). Other factors, such as appreciation shown by other specialists, low stress/ responsibility were found to be less influential. Our results are similar to Maj and Baerlocher (1) who identified the factors leading to radiology in the selection process among different groups of medicine adepts. The percentage of students choosing radiology as planned career rose after a few years of training. The most relevant factors were intellectual stimulation of challenge and work load flexibility. The other report (2) suggests that lifestyle and income increasingly affect medical students' career choices during the study period. Those factors have become more important to medical students in their career choice, and the relative influence of these factors varies considerably between specialities. Students' perceptions of specialities existed on a continuum of lifestyle friendly (e.g. radiology) to lifestyle unfriendly (e.g. obstetrics-gynaecology) (2). This is likely to be the reason of higher percentage of graduate students choosing radiology as a future specialization. However, similar to ours, the results of studies conducted among medicine students in Poland have not been published so far, similar problems were discussed in researches of radiologists in the Lublin region (3, 4). The awareness of their own competence and appreciation shown by co-workers were indicated by radiologists as the main positive aspects of their work, while fear of misdiagnosis and low salaries as sources of work-related stress. Although the examined problem requires further, comprehensive researches, it could underlie a basis for future exploration in ionizing radiation exposure awareness problem among students and their future career selection.

REFERENCES

1. Maj L., Baerlocher M. O.: Factors leading to radiology career selection: results of the national physician survey. *Can. Assoc. Radiol.*, 57, 175, 2006.
2. Newton D. A., Grayson M. S., Thomas L. F.: The variable influence of lifestyle and income on medical students' career specialty choices: data from two US medical schools, 1998–2004. *Acad. Med.*, 80, 809, 2005.
3. Czekańska-Chehab E., Okła W., Drop A. et al.: The professional burnout syndrome in radiologist profession, *Annales UMCS, Sect. D*, 58, 254, 2003.
4. Czekańska-Chehab E., Drop A., Okła W.: Satisfaction and stress factors in the radiologist's profession *Annales UMCS, Sect. D*, 58, 261, 2003.

SUMMARY

The aim of the study was to find out the medical students' opinions on various aspects related to the ionizing radiation exposure of the radiologists. Data from 180 questionnaires conducted amongst students of Medical Faculties (88 – 1st year – G1 and 92 – 5th year – G2) were analyzed. The questions concerned: own experiences, knowledge gained during studies, and fears related to the use of radiation during diagnostic procedures. In the past 143 students underwent X-ray examinations and the majority was aware of potential risks. Both groups showed moderate knowledge about radiation exposure of patients and radiologists; 28.4% (G1) and 29.3% (G2) students considered radiology as a planned speciality; 23.9% (G1) and 13.0% (G2) were afraid of adverse effects of radiation. Despite high awareness of health risks related to radiology, the students found it quite attractive.

Problem ryzyka narażenia na promieniowanie jonizujące w zawodzie radiologa
w opinii studentów Wydziałów Lekarskich Akademii Medycznej w Lublinie

Celem naszej pracy było zbadanie opinii studentów medycyny na temat różnych aspektów związanych z narażeniem na promieniowanie jonizujące w pracy lekarza radiologa. Dane zebrano na podstawie 180 kwestionariuszy ankietowych uzyskanych od studentów Wydziału Lekarskiego (88 studentów pierwszego roku – grupa G1 oraz 92 – piątego – G2). Pytania dotyczyły własnych doświadczeń w kontaktach z radiologią, wiedzy zdobytej w trakcie studiów oraz obaw związanych z użyciem promieniowania X w czasie badań diagnostycznych. W przeszłości 143 studentów miało wykonane badania radiologiczne z użyciem promieniowania jonizującego. Większość wyrażała obawy związane z potencjalnymi efektami ubocznymi. Obydwie grupy wykazywały zróżnicowany poziom wiedzy o narażeniu pacjenta oraz radiologa w czasie badań. 28,4% (G1) oraz 29,3% (G2) rozważało wybór radiologii jako kierunku specjalizacji. Obawy o uboczne skutki promieniowania wyrażało 23,9% grupy G1 i 13,0% grupy G2. Pomimo wysokiego stopnia świadomości rezultatów zdrowotnych promieniowania X związanego z pracą radiologa specjalność ta wydaje się atrakcyjna dla studentów.

EGZEMPLARZ OBOWIĄZKOWY
BIBLIOTEKA
IMCS
17.01

