

RADIOLOGICAL EXAMINATIONS WITH NEGATIVE RESULTS IN HOSPITALS OF LIMA – 2010

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1. Summary. A research over the negative results on the radiological exams on a day-work, has been made in June, July and August 2010, in three of the mains hospitals of Lima and Callao. It has been found that 1306 tests were taken. At the Hospital Nacional Edgardo Rebaglati Martins (Essalud) 888 tests were done, the percentage of negative results were as follow: conventional radiology 50.6%; interventional radiology 0%, mammograms 42.8%; computed tomography 27.1%.The percentage of negative radiological examinations from all studies was 40.7%.

At the Hospital Nacional Hipolito Unanue 224 tests were done and the negative results were as follow: conventional radiology 52.4 %, interventional radiology 25%, mammograms 100%, computed tomography 38.5% and the percentage of radiological examinations from all studies was 51.3%.

At the Hospital Nacional Daniel Alcides Carrion 194 tests were done and the negative results were as follow: conventional radiology 83%, interventional radiology 5%, mammograms 90%, computed tomography 58.3% and the percentage of radiological examinations from all studies was 80.4%.

The percentage of negative results of the radiological examinations from the three hospitals was: conventional radiology 53.5%, interventional radiology 4.5%, mammograms 54.3 %, computed tomography 29.7% and the percentage of radiological examinations from all studies was 48.5%.

Key Words: Health, patient protection against radiation.

2. Introduction. There is concern in the world for the increase on patients exposure to IR and its excessive use. The World Health Organization (WHO) and the International Atomic Energy Agency (IAEA) have stated today that the medical diagnosis has misused the ionizing radiation, making an extensive use of it.

The conclusions from Seminario y col. (2008) and the research “Exposición a la radiación ionizante por motivos médicos en la población de Lima y Callao” , (Exposure of patients to ionizing radiation for medical reasons in Lima and Callao) done by the same team and made known at the “Encuentro de Interfacultades de profesores e investigadores de la UNFV” , which was organized by the Oficina Central de Investigación – OCI (2009) , tell us that 72.3% of the patients were exposed to ionizing radiation. The group with larger number of exposures, with 345 patients, was that from 18 to 27 years old. This arises the worry from the Jury who was to evaluate, over the real need of the exposures. As a consequence, it was suggested, an inquire to know whether the use of ionizing

radiation is justified or not, this will interested not only all medical areas but also the management and educational areas. Questions: ¿what is the percentage of negative results from the radiological examinations in three hospital of Lima – 2010?

3. General purpose: To establish the percentage of negative results from radiological examinations in three hospitals of Lima-2010.

Specific purpose: To ascertain the percentage of negative results in every hospital, to know the number of patients in every radiological field that has undergone a radiological examination and to establish the percentage of negative results from every area of the radio diagnosis.

3. Method. A cross-sectional, descriptive and prospective study.

Participant. Three of the main hospitals of Lima and Callao 2010.

Sample. The total results from radiological examinations of patients to whom an exam in the radiological services of the hospitals, on a fixed day, were taken with the purpose of using them for the present inquire.

Analysis Unit. Every exam taken for the purpose of the present inquire.

Means. An inquire-form was designed, to be filled with the information required such as name of the hospital, type of exams requested and so far. The results will be quoted as follow: **negative** for normal, **positive** for any type of illness or bone fracture, **no report** when there was no radiological inform, **repeat** when the quality of the plaque is not good or there is a doubt or when the patient failed to appear.

Procedures. Only hospitals where conventional and interventional radiology as well as mammograms and computed tomography are done, were chosen. The dates were fixed in advance: June the 8th. at the Hospital Nacional Edgardo Rebagliati Martins (HNERM), from EsSalud, head of the RED of the Seguridad Social (Social Security), which treat external and internal patients and has an emergency service, June the 9th. at the Hospital Nacional Hipolito Unanue (HNHP), from the Ministry of Public Health, located in Limas populated outskirts El Agustino, June the 15th. at the Hospital Daniel Alcides Carrión , from the Ministry of Public Health, located in El Callao. On this day none gynecological and digestive exams were taken, to fill the gap we use the patients register and the medical reports of each services, SPSS vs. 13.

4. Results and Discussions. In a single day 1306 exams were taken (Table 1), this shows that the use of X- rays plays an important role in the diagnosis of an illness or bone fracture.

The benefits of using X-rays are greater than the risk when these are used properly. Therefore, in terms of Radiological Protection, the role of the doctor who request the X-rays and the role of the technical assistant who carries out the exams are very important when it comes to decide the radiation dose in order to minimize the risk without affecting the quality of the X-rays plaque.

On greater demand are the thorax X-rays (495), this is due to the fact that the surgeon request a plaque before and after the surgery, because of the vast information it provides. In addition to this the staff must have a thorax X-rays before leaving on holidays. The negative result of the thorax X-rays is 61.3%.

Table 1. Exams taken at the three hospitals.

Exams	Institución			Total
	HNERM	HNHU	HNDAC	
Digestive	7	1	0	8
Gynaecology	5	2	0	7
Thorax	296	119	80	495
Bony	189	74	67	330
Abdomen	22	10	11	43
Urology	10	0	2	12
Mammography	35	1	10	46
Tac Brain	80	3	21	104
Tac Abdominal	67	2	3	72
Tac-Pelvic	52	1	0	53
Tac Thorax	49	1	0	50
Tac-Otherc	58	6	0	64
Artheriograhy	0	1	0	1
Biopsys	4	0	0	4
Embolyzations	1	0	0	1
Cavography	1	0	0	1
Nephrostomy	2	0	0	2
Catheters	2	0	0	2
Pancreatography	3	3	0	6
Heart catheters	3	0	0	3
Angioplasty	2	0	0	2
Total	888	224	194	1306

Table 2 shows a considerable increase on the request of conventional radiology, one of the reasons is health prevention, for example the mammograms are recommended to all women over 40 to prevent breast cancer, thorax X-rays is requisite for a health certificate and recommended as prevention to TBC. In the whole country were found 35,541 patients affected by TBC, in terms of morbidity 129.02 x 100,000 inhabitants. Bonilla (2009), which is a high rate in our country.

Table 2. Results from conventional radiology at the three hospitals.

RESULTS	HNERM		HNHU		HNDAC		Total	
	N°	%	N°	%	N°	%	N°	%
Negative	264	50.6	108	52.4	133	83	505	56.8
Positive	204	39	97	47	27	17	328	37.
No report	54	10.4	1	0.6	0	0	55	6.2
TOTAL	522	100	206	100	160	100	888	100

According to World Health Organization (WHO) 12 new breast cancer will be detected at the end of 2010 and more than 1,300 women will die, due to the lack of preventive culture. Alfredo Dammert, Presidente de la Liga Peruana de Lucha contra el Cancer, stated that his organization has saved the life of more than 1,400 women, to whom breast cancer were detected on time, that alone in 2009 more than 15,000 mammograms were done. (<http://www.rpp.com.pe/2010-10-19>). On Table 3, the positive results from these exams are 45.7%.

Table 3. Results from mammograms done at the three hospitals.

RESULTS	HNERM		HNHU		HNDAC		TOTAL	
	N°	%	N°	%	N°	%	N°	%
Negative	15	42.8	1	100	9	90	25	54.3
Positive	16	45.7	0	0	1	10	17	37
No report	4	11.5	0	0	0	0	4	8.7
TOTAL	35	100	1	100	10	100	46	100

It is worth mentioned “the heart super X-rays” published by Chang (2009), it shows five heart studies. In these cases clinic and functional exams evaluate the patient. This explains the results shown on Tables 1 to 4.

Table 4. Results from interventional radiology at two hospitals.

RESULTS	HNERM		HNHU		TOTAL	
	N°	%	N°	%	N°	%
Negative	0	0	1	25	1	5
Positive	18	100	3	75	21	95
No report	0	0	0	0	0	0
TOTAL	18	100	4	100	22	100

The TC tests results on Table 5 show that on a single day 343 tomographies were done, that is to say 26.3% of the entire medical exposure, within the 10% to 35% TC of the total ionizing radiation exams, (OIEA, March 2010). Patients received a dose of 60% to 70%, also says that in more than 400 exposures to radiation in 8 hospitals, showed side effects such as loosing hair, skin lesion. We lack of information over the side effect of the ionizing radiation exams in the rest of the country. The results were negative at the HNDAC in 58.3%, at the HNHU in 38.5%, at the HNERM out of 306 exams 27.15% were negative. Nevertheless the authorities are concern with the increase in the patient's dose. The negative results from the computed tomographies at the three hospitals are 29.7%, which justify the exposure.

Table 5. Results from computed tomography at three hospitals.

RESULTADO	HNERM		HNHU		HNDAC		Total	
	N°	%	N°	%	N°	%	N°	%
Negative	83	27.1	5	38.5	14	58.3	102	29.7
Positive	222	72.5	8	61.5	10	41.7	240	70
No report	1	0.4	0	0	0	0	01	0.3
TOTAL	306	100	13	100	24	100	343	100

Table 6 allows us to evaluate the use of technology, our source Calvo-Villas (2007), out of 2086 radiological exams, 84% were simple radiology exams, 2% were done with contrast dye, 14% axial computed tomography (TC), results that differs from our own research: conventional radiography 68.5% (simple and with contrast dye) interventional radiography 1.7%, mammograms 3.5% y TC 26.3%. The difference might be, on a wider use of technology by the hospitals involved.

Table 6. Exams and results by hospitals.

Exams and Results	HNERM				HNHU			HNDAC			TOTAL	
	N	P	NR	R	N	P	NR	N	P	NR	N°	%
Conventional	264	204	54	7	108	97	1	133	27	0	895	68,5
Interventional	0	18	0	0	1	3	0	0	0	0	22	1,7
Mammograms	15	16	4	0	1	0	0	9	1	0	46	3,5
Computed Tomography	83	222	1	0	5	8	0	14	10	0	343	26.3
TOTAL	362	460	59	7	115	108	1	156	38	0	1306	100

Note: N = Negative P = Positive NR = No Report R = Repeat

To repeat 7 exams, 0.6% of the total, it is a relative low percentage and shows a good work done concerning the images quality, Fleitas (2006), who also remarks the use of modern technology at

the hospitals in Perú and the frequent training of the staff (a x-rays technician studies 5 years). The International Organizations and related professional organism should continue to work together within the present “Plan de Acción Internacional para la protección radiológica de los pacientes”, in order to strength the radiological protection in all areas of the ionizing radiation.

Table 7. Contingency at three hospitals and results.

Hospitals	Negative		Positive		No report		Repeat		Total	
	N°	%	N°	%	N°	%	N°	%	N°	%
HNERM	362	40.7	460	52	59	6.6	7	0.7	888	100
HNHU	115	51.3	108	48.2	1	0.5	0	0	224	100
HNDAC	156	80.4	38	19.6	0	0	0	0	194	100
Total	633	----	606	---	60	---	7	0.4	1306	100

5. Conclusions:

1. Total exams at the three hospitals 1,306.
2. At the HNERM 888 exams: conventional radiology 529, interventional radiology 18, mammograms 35, computed tomography 306.
3. At the HNHU 224 exams: conventional radiology 206, interventional radiology 4, mammograms 1, computed tomography 13.
4. At the HNDAC 194 exams: conventional radiology 160, interventional radiology 24, mammograms 10, computed tomography 24.
5. Negative results at the HNERM: conventional radiology 50.6%, interventional radiology 0%, mammograms 42.8%, computed tomography 27.1%, meaning 40.7% of the total exams.
6. Negative results at the HNHU: conventional radiology 52.4%, interventional radiology 25%, mammograms 100%, computed tomography 38.5%, meaning 51.3% of the total exams.
7. Negative results at the HNDAC: conventional radiology 83%, interventional radiology 5%, mammograms 90%, computed tomography 58.3%, meaning 80.4 % of the total exams.
8. Negative results percentage at the three hospital: conventional radiology 53.5%, interventional radiology 4.5%, mammograms 54.3%, computed tomography 297%, meaning 48.5% of the total exams.

Recommendations. Taken actions to avoid patients unnecessary exposure to ionizing radiation, make widely known among the patients, the Protection Guide Against Radiation, engaged the doctor in charge to consider always the less risky exam.

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