ORIGINAL ARTICLE

The frequency of various indications for plain chest radiography in Nnamdi Azikiwe University Teaching Hospital Nnewi (Nauth)

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Abstract

Background: With soaring advances in the field of medicine, the place of older radiologic imaging modalities is being reduced to basic screening tools. Yet the modern imaging modalities like computerized tomography (CT), magnetic resonance imaging (MRI), ultrasound and nuclear medicine are hardly available.

Study Objectives: To study the frequency of various indications of plain chest radiography, remind us of its uses and to enhance the preparedness of the department to maximally accomplish the ideals of this investigation.

Methodology: A total of 1476 consecutive patients for chest radiography in the department of radiology, NAUTH, Nnewi from the period of February 2009 and whose request form contain adequate data were recruited for this study. These data were analyzed using SSPS.

Results: A total of 1476 patient were included in this study. There was female preponderance with male to female ratio of 1.3:1. Mean Age of the patients is 39.32 years (std19.56). The most frequent indication for chest radiography is certain infections and parasitic diseases (40.9% and the greatest source of referral for this study is General outpatient (GOPD)/family medicine department.

Conclusion: The most frequent indications for chest radiography in the study are certain infection and parasitic diseases. Chest Radiography is the most frequent plain radiography study in our environment where infectious diseases are still very rampant. This makes chest radiography an important study for screening patient for possible diagnosis and classifying the need for further radiographic investigation of our patients.

Key words: Frequency, indications, infections, plain chest radiograph, screening

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Introduction

We are in an age of rapid technological advancement in the field of medicine leading to great emphasis being placed on modern radiological imaging modalities like CT, MRI, Ultrasound, and Nuclear medicine imaging.[1,2] This advance has reduced the place of older imaging studies like plain chest radiography to basic screening investigations. Yet these advanced modalities are rarely available in our environment.[3] This makes it very important for available investigative modalities to be maximized and if possible enhanced. Chest radiography is a radiographic procedure used to evaluate organs and structures within the chest and symptoms of other diseases referable to the chest.[3] Chest radiography will include views of the lungs, heart small portions of gastro-intestinal tract, thyroid gland, bones of the chest wall and surrounding soft tissues. Conventional chest radiography remains the cornerstone of day to day management of critically ill patient occasionally supplemented by CT,[1,2] it is the most widely used diagnostic imaging technique in our environment and also the western society as well.[2,4-8] It is cheap and relatively non-invasive.[3,6]

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Methodology

All consecutive patients with request for plain chest radiography in our department from February 2009 were used for this study. Those whose request forms contain their biodata and indications for the study were included but those whose request form were deficient of the above were excluded from the study. The indications for the study were classified using the international statistical classification of diseases and related health problem. The data collected were analyzed using SSPS analytical tool and result of the analysis shown in tabular and graphic forms.

Results

A total of 1476 patients were included in the study. The age range of patients is from 0 to 100 years. The mean age was 39.32 years (Std. 19.56). The modal age was 30 years [Figure 1]. There was an overall female preponderance with a female to male ratio of 1.3:1 [Figure 2]. In the earlier ages of 0-19 years more males were involved, but more female were involved between 20-69 years range, but from 70 and above males predominate [Table 1]. The most common source of our patient was from family medicine department.

This was followed by IHV/RVD clinic, and the least source was from obstetrics and gynecology department [Figure 3].

The findings from our study revealed that the most common indication for chest radiography is from certain infections and parasitic diseases (40-9%). This is followed by diseases of the circulatory system (20.6%) then is order of decreasing frequencies, diseases of the respiratory system (12.3%) factors influencing contact to health services (7.5%) and symptoms, signs and unclassified clinical and laboratory findings 4.5%. Neoplastic disorders, digestive systems disorders, MSK and injuries (traumatic condition) all together contributed about 2% of the reasons for chest.

Neoplastic disorders, digestive system disorders, MSK and injuries (Traumatic disorders) all together contribute about 2% of the reasons of plain chest radiography in our study. [Table 2].

Discussion

The age distribution of patient involved in this study reveal overall female preponderance. They are more males involved in the early and late while Females were more around the bearing ages. This corresponds with more females attending hospitals within the reproductive ages while males are more favored by our society in the early ages. In a study by Anout *et al.*[3] more males were involved than females.

The average age in our study is 39 years which also varies with findings by Anout *et al.*[3] where the average age is 57 years, though this can be explained by higher ages of their patient (minimum ages being 18).

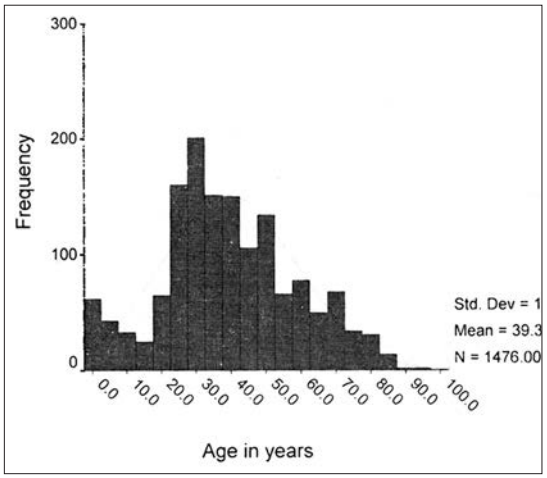

Figure 1: Bar Chart showing frequency of patient age

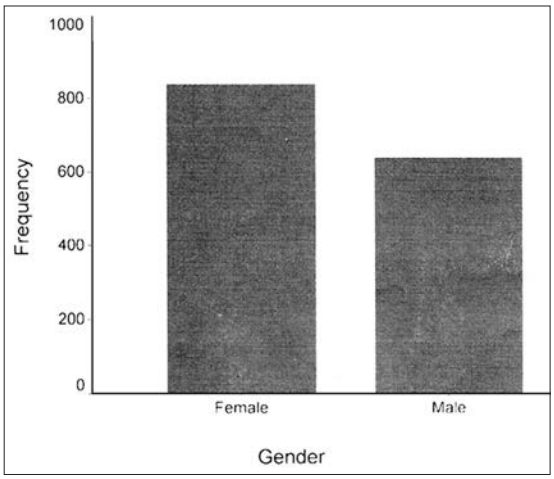

Figure 2: Bar chart showing frequency distribution by sex

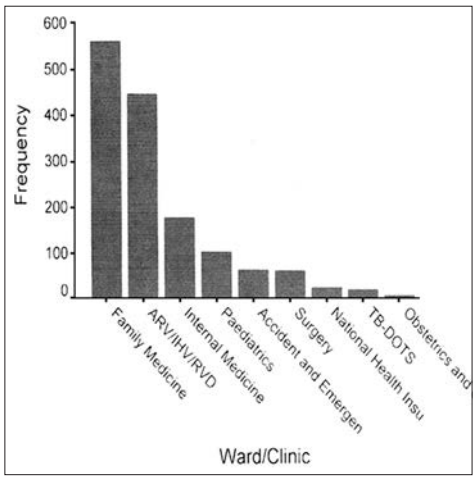

Figure 3: Bar chart showing frequency distribution by ward/clinic

Table 1: Table of Frequency of age/gender cross- tabulation by sex

Age Category * Gender Cross tabulation

			Gender		Total
			Female	Male	
Age Category	0-9 yrs.	Count	53	61	114
		% within age category	46.5%	53.5%	100.0%
	10-19 yrs.	Count	33	34	67
		% within age category	49.3%	50.7%	100.0%
	20-29 yrs.	Count	180	101	281
		% within age category	64.1%	35.9%	100.0%
	30-39 yrs.	Count	196	143	339
		% within age category	57.8%	42.2%	100.0%
	40-49 yrs.	Count	135	108	243
		% within age category	55.6%	44.4%	100.0%
	50-59 yrs.	Count	107	71	178
		% within age category	60.1%	39.9%	100.0%
	60-69 yrs.	Count	75	49	124
		% within age category	60.5%	39.5%	100.0%
	70-79 yrs.	Count	43	47	90
		% within age category	47.8%	52.2%	100.0%
	≥ 80 yrs.	Count	16	24	40
		% within age category	40.0%	60.0%	100.0%
Total		Count	838	638	1476
		% within age category	56.8%	43.2%	100.0%

Table 2: Table showing frequency of various indication by classification

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Certain infections and parasitic diseases	604	40.9	40.9	40.9
	Diseases of the circulatory system	304	20.6	20.6	61.5
	Diseases of the Respiratory system	181	12.3	12.3	73.8
	Factors influencing contact to health services	110	7.5	7.5	81.2
	Symptoms, signs, clinical and lab findings unclassified	67	4.5	4.5	85.8
	Neoplasm	41	2.8	2.8	88.6
	Diseases of Digestive system	39	2.6	2.6	91.2
	MSK and connective Tissue disorders	36	2.4	2.4	93.6
	Injuries, positions and consequences of external cause	30	2.0	2.0	95.7
	Endocrine, Nutrition and Metabolic diseases	22	1.5	1.5	97.2
	Diseases of the Genito-urinary system	19	1.3	1.3	98.4
	Mental and Behavioural Disorder	6	4	4	98.8
	Diseases of Nervous System	6	4	4	99.3
	Haematological Disorder	4	3	3	99.5
	Diseases of the Ear and Mastoid	3	2	2	99.7
	Congenital Malformation, Deformation Chromosomal abnormality	2	1	1	99.9
	Diseases of the Skin and Subcutaneous tissue	1	1	1	99.9
	Conditions Originating in Prenatal Period	1	1	1	100.0
	Total	1476	100.0	100.0	

The most common source of our patients for this study came from GOPD/Family Medicine. This is the first place where patients who have not been investigated go to and therefore they become the largest pool of patients for baseline/Initial investigation. By the time these patients are referred they do not have much need for further repeat of chest radiography.

The commonest indication for chest radiography in this study is certain infections and parasitic diseases (40.9%). This agrees with infections being the predominant cause of disease in the tropics. It agrees with a study by Natalie C.M *et al* that infection is the largest indications for chest radiography among medical patients.[2,9] Chest radiography is very important for diagnosis of chest infective conditions and also in planning for further diagnostic workup.[1] Chest radiography is important investigation in our environment where many are within the lower income bracket. This agrees with the finding by Kristin *et al.* which shows that socio-economic factors affect access/use of radiographic investigations generally.[6,7]

Since most of our patient for this study came from GOPD/Family medicine which is our filter clinic, it will serve as good baseline investigation for patients with chest diseases/chest referable illness before they are referred for specialist care.[1,6]

With the number of HIV/AIDS patients in our Centre, chest radiography will serve to screen for various chest complications/manifestations of disorders like pulmonary tuberculosis and pneumocystitis carini pneumonia. It can be a means for the assessment of the need for any further radio-diagnostic workup.

Conclusion

Having seen that the most common indication for chest radiography in our study is certain infections and parasitic diseases and that infectious diseases are prevalent cause of disease/ill-health among our people, it becomes very important that this available technique that our people can afford should be maximized and enhanced. It should still be used by our health care personnel's for diagnosis, planning and assessment of therapies even when the modern cross-sectional imaging modalities become available.

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