International Journal of Innovation Scientific Research and Review
Vol. 06, Issue, 06, pp.6553-6555, June 2024
Available online at http://www.journalijisr.com
SJIF Impact Factor 2023: 6.599

Research Article

ISSN: 2582-6131

DESCRIPTION OF THE CHEST X-RAY RESULTS IN GERIATRIC PATIENTS AT PREMAGANA GENERAL HOSPITAL IN 2023

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Received 14th April 2024; Accepted 15th May 2024; Published online 30th June 2024

ABSTRACT

Background: Currently, there is change in demographic structure with tendency to increase the number of elderly. Chest x-ray examination in the elderly has routinely become the initial reference to determine abnormalities that occur in the thoracic cavity. This study aims to determine the description of the results of chest x-ray in geriatric patients. Methods: This is a retrospective descriptive study conducted at Premagana General HospitalGianyar. The study used secondary data from the medical records of geriatric patients who performed chest x-ray examinations in 2023. Sampling was carried out by consecutive sampling, namely any medical record data of geriatric patients who met the inclusion and exclusion criteria of this study were included in the study sample. The data were then processed using the SPSS computer program. After that, the data were presented in tabular form and described. **Results:** A sample size of 571 people was obtained with the highest sample distribution in 60-74 years(88.6%), male gender (58.5%), and smoking habits (52.2%). The results of pathological chest x-ray were more than normal (91.6%), with the most abnormalities: cardiomegaly, vascular calcification and bronchitis.**Conclusion:** The most common pathologic feature of chest x-ray is cardiomegaly.

Keywords: Geriatric,Chest x-ray, Abnormalities, Pathologic.

INTRODUCTION

Geriatrics is one part of internal medicine that studies aspects of prevention, improvement, treatment, recovery, psychological and social aspects of diseases in old age.[1] Geriatric patients are different from other young adult patients, both in terms of the concept of health and in terms of the causes, course, and symptoms and signs of the disease, so that the procedure for diagnosis in geriatric patients is different from other populations.[2] Based on data from the Central Bureau of Statistics in 2024, it was reported that the percentage of elderly people in Indonesia was 11.75% in 2023, which increased by 1.27% compared to the previous year of 10.48%. The percentage is predicted to further increase to 12.5% in the next five years, then 14.6% in 2030, 16.6% in 2035, and 18.3% in 2040. This figure is a good sign because the increase in the number of elderly, followed by an increase in life expectancy, is a sign that Indonesia is entering the aging population period.[3,4]

This change in demographic structure has also resulted in changes in the health care strategy in Indonesia, namely by paying more attention to diseases that occur in the elderly. One of the routine examinations that need to be done in the elderly is a chest x-ray which has become an early reference to determine abnormalities that occur in the thoracic cavity.[5] In addition, this examination is relatively fast, cheaper and easier. This chest x-ray examination itself has become one of the mandatory procedures, especially for geriatric patients who come for treatment with various complaints and disease diagnoses.[6] However, until now no one has described how the picture of the results of chest x-ray specifically in geriatric patients who seek treatment at Premagana General Hospital Gianyar, so the authors are interested in conducting research on the description of the results of chest x-ray in geriatric patients who seek treatment at Premagana General Hospital in 2023.

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METHODS

This study was a retrospective descriptive study conducted at Premagana General Hospital Gianyar. The study used secondary data from the medical records of geriatric patients who performed chest x-ray examinations from January to December 2023. Data collection and research were carried out within 3 months, from February to April 2024, at the Radiology Installation of Premagana General Hospital Gianyar. The study population was the medical record data of geriatric patients who performed a chest x-ray examination at Premagana General Hospital Gianyarin 2023. Sampling was carried out by consecutive sampling, namely any medical record data of geriatric patients who met the inclusion and exclusion criteria of this study were included in the study sample. The inclusion criteria for this study were all medical record data for geriatric patients who performed a chest x-ray examination at Premagana General Hospital Gianyar. The exclusion criteria for this study were incomplete medical record data for geriatric patients. Dataisthen processed using the SPSS computer program. After that, data is presented in a table form and described.

RESULTS

In this study, the sample size was 571 people who met the inclusion and exclusion criteria. Table 1 shows that the distribution of samples based on age is highest in the age group 60-74 years, with as many as 506 people (88.6%) and the lowest in the group over 90 years, totaling 5 people (0.9%). For gender, most of them were men, totaling 334 people (58.5%), while women amounted to 237 people (41.5%). All samples (100%) had a history of disease before this chest x-ray examination, and most samples (52.2%) had a smoking habit. The results of pathological chest x-ray were more common (91.6%), with

abnormalities in the most common being cardiomegaly, vascular calcification and bronchitis.

Table 1. Frequency Distribution of Samples by Age Category, Gender, and Chest X-ray Results

Category	Frequency	Percentage (%)
Age		
60-74 Years	506	88,6
75-90 Years	60	10,5
>90 Years	5	0,9
Sex		
Male	334	58,5
Female	237	41,5
History of Disease		
Present	571	100
Not Present	0	0
History of Smoking		
Smoking	298	52,2
Not Smoking	273	47,8
Chest X-ray Results		
Normal	48	8,4
Pathologic	523	91,6
Chest X-ray Abnormalities		
Cardiomegaly	380	72,6
Vascular calcifications	194	37,1
Bronchitis	80	15,2
Infiltrateorconsolidation	48	9,2
Emphysemapulmonal	48	9,2
Right diaphragm high position	40	7,6
Fibrosis	39	7,4
Congestive pulmonal	37	7,1
Pleura effusion	36	6,9
Cavity	35	6,7
Edema pulmonal	24	4,6
Lymphadenopathyhillus	20	3,9
Bronchiectasis	12	2,3
Nodule	4	0,8

Table 2 shows that most of the pathological chest x-ray were in the age category of 60–74 years (81%) and male gender (55.9%).

Tabel 2. Frequency distribution of chest x-rays based on age and gender categories

	Chest x-ray results	
	Normal	Pathologic
Age		
60-74 Years	43 (7,5%)	463 (81%)
75-90 Years	5 (0,9%)	55 (9,7%)
> 90Years	0 (0%)	5 (0,9 %)
Sex		
Male	15 (2,6 %)	319 (55,9 %)
Female	33 (5,8%)	204 (35,7 %)

In Table 3, based on gender, it is illustrated that men have the three highest chest x-ray abnormalities, namely cardiomegaly, infiltrate/consolidation, and bronchitis, while in women, namely cardiomegaly, vascular calcification, and bronchitis. Based on age, it was found that the three highest chest x-ray abnormalities were in the age range of 60–74 years, namely cardiomegaly, vascular calcification, bronchitis and pulmonary emphysema.

Table 3.Frequency distribution of chest x-ray abnormalities by sex and age category

	Chest x-ray abnormalities(%)						
	Cardiomegaly	Vascular calcification	Bronchitis	Infiltrates/consolidation	Pulmonary emphysema	Right diaphragm high position	Fibrosis
Sex							
Male	58,5	67	75	79	6,6	4	4,7
Female	41,5	33	25	3,1	2,6	3,6	2,9
Age (years)							
60-74	86	86	78,1	56,4	78,1	57,1	56,1
75-90	12,6	12,6	20,5	42,9	20,5	42,6	43,6
> 90	1,4	1,4	1,4	0,7	1,4	0,3	0,3

	Chest x-ray abnormalities (%)						
	Congestive pulmonal	Pleura effusion	Cavity	Edema pulmonal	Lymphadenopathy hillus	Bronchiectasis	Nodule
Sex							
Male	3,5	3,7	3,3	3	2	1,1	0,8
Female	3,6	3,2	3,4	1,6	1,9	1,2	0
Age (years)							
60-74	57,4	55,1	56,4	59,2	58,2	56,4	64,5
75-90	41,9	44,6	42,9	40,8	41,8	42,9	35,5
> 90	0,7	0,3	0,7	0	0	0,7	0

DISCUSSION

In this study, it was found that the highest number of samples was aged 60-74 years and male. All samples had a history of disease before this chest x-ray examination and most of them had a smoking habit. This can occur because the sample in this study is more male. Smoking behavior is common for Indonesian people, especially men. Smoking is a major risk factor for various cardiovascular and pulmonary diseases.[7] In addition, smoking is also one of the risk factors for various non-communicable diseases such as cardiovascular disease, stroke, chronic obstructive pulmonary disease, lung cancer and oral cancer.[8]

The number of pathological chest x-ray was more than normal with the most abnormalities, namely cardiomegaly, vascular calcification and bronchitis. From the data of this study, it is found that the older the patient, the more thoracic abnormalities the patient will have. This is because the body's immune ability to fight infection decreases including the speed of the immune response with increasing age. With increasing age, physiological functions decrease due to the aging process, non-communicable diseases appear in the elderly. In addition, degenerative problems reduce the body's resistance, making it vulnerable to infectious diseases.[9] This study found several previous medical histories such as hypertension, diabetes mellitus, congestive heart failure, coronary heart disease, arthritis, asthma, dyslipidemia, tuberculosis, chronic obstructive pulmonary disease, urinary tract stones, enlarged prostate, cholelithiasis and kidney infection. The finding of cardiomegaly is associated with an increased risk of cardiovascular disease with age. The size of the heart enlarges in response to changing conditions or an increased workload of the heart which pushes it to pump blood harder than usual or

damages the heart muscle. Vascular calcification occurs due to thickening of the valves caused by deposits of fat, collagen and calcium salts. Calcification of the aorta is common but not always associated with clinical situations.In older people, calcification of the thoracic aorta, heart valves and coronary arteries indicates a higher risk of cardiovascular disease. Most cases of chronic bronchitis are caused by long-standing airway infections due to exposure to cigarette smoke, vehicular or industrial pollution, and chemicals.[10,11]

The male gender mostly has pathological chest x-ray with the most abnormalities, namely cardiomegaly, infiltrates/consolidation and bronchitis. From the data of this study, men have more thoracic abnormalities. This is because men are more likely to lead unhealthy lifestyles such as smoking and drinking alcoholic beverages, emotional mental disorders due to work pressure, high exposure to pollutants, and behaviors related to accidents and injuries.[12] Infiltrates are common due to pneumonia, which is often suffered by geriatric patients due to compromised immune systems and the influence of drugs that can alter immune function.[13]

CONCLUSION

In this study, the number of pathological chest x-rays was higher than normal, with the most abnormalities being cardiomegaly, vascular calcification, and bronchitis. Most of these results are in the age range of 60–74 years, male gender, and have a history of smoking.

ETHICAL CLEARANCE

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CONFLICTOF INTEREST

The authors declare that there is no competing interest regarding the publication of this article.

FUNDIG

The authors are responsible for the study's funding without the involvement of a grant, scholarship, or other funding resources.

AUTHORCONTRIBUTIONS

Author contributed equally to this research from the conceptual framework, data gathering, and analysis until the final report's interpretation of the results.

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