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EVALUATING THE PREVALENCE OF ABNORMAL LESIONS OF CHEST X-RAY BEFORE ELECTIVE EXTRA THORACIC SURGERY IN PATIENTS WITH ASA CLASS 1 AND 2

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Abstract:

Background and Purpose: *Accurate assessment prior to surgery helps the anesthesiologist to improve the patient's condition before surgery and to have a better approach toward the specific condition of each patient. Numerous studies show that in the absence of evidence of underlying illness in history or clinical examination, the usefulness of radiography is quite low.*

Materials and Methods: *This is a descriptive epidemiologic study conducted in Imam Khomeini Hospital in Ahvaz, Iran in 2010. we evaluated the incidence of abnormal lesions of chest x-ray in patients with grade 1 and grade 2 ASA who had elective chest surgery . We examined 323 chest radiographs. The data gathering tool includes a questionnaire for the Features of the individual characteristics and the chest x-ray check list . Data were analyzed using descriptive-inferential statistics in SPSS version 20*

Findings: *Results showed that natural lesions were detected in 112 (34%) radiographs, 62 people of men (40%) and 50 people of women (29%) had an abnormal lesion in the chest radiography. Abnormal lesions were found in 14 patients (0.08%) with class 1 ASA and in 98 patients (63%) with class 2 ASA and it was higher in patients with the age of more than 65 years.*

Conclusion: *This study suggests that chest radiographs before surgery are not useful for women under the age of 65 who have class 1 ASA.*

Keywords: *Thoracic surgery, Abnormal lesions, chest x-ray, , ASA*

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INTRODUCTION:

Death and disability during surgery are increased depending on the severity of underlying illness. An accurate assessment prior to surgery helps the anesthesiologist to improve the patient's condition before surgery and to have a better approach toward the specific condition of each patient. Preoperative chest radiography is commonly used in conjunction with laboratory tests. Previously, the most important reason for performing preoperative chest radiography was to determine the patients with asymptomatic tuberculosis. However, despite the reduced prevalence of the disease, some physicians continue to apply for chest radiography before surgery (1).

Preoperative chest radiography usually is performed to achieve the following goals:

1- Evaluating the previously known disease
2- Detecting the abnormal lesions that are not predictable according to the history and clinical examination and they can affect anesthesia or surgery.
3- Determining the template for later comparison
4- Forensic Medicine goals
5- Economic Objectives

Various studies have shown that in the absence of a biopsy or clinical examination indicating a particular disease, the usefulness of chest radiography is quite low (1). Detecting the unpredictable abnormalities is low through biographies or examination, and it rarely affects the method determination and the continuation of anesthesia or surgery (2). If pre-operative chest radiography is not performed, almost all lesions are detected by considering the patient's precise history (3).

Pre-operative chest radiography is still used despite the high costs and low results. Today, many physicians use their clinical skills and history to reduce the use of radiography (4). Some academic communities and international associations also tend to avoid preoperative chest radiography. Reduced pre operative chest radiography can reduce the cost, hospitalization time and the harmful effects of unnecessary diagnostic measures (1, 2).

The results of the studies show that pre operative radiography should be performed for the patients with the age of over 65 years, those who have a history of cardiovascular or pulmonary disease, the patients who smoke more than 20 cigarettes a day, and those who have grade 5-3 ASA or have incomplete clinical examinations and biographies (5). Preoperative radiological evaluation is not essential in patients without a history of cardiovascular and pulmonary patients, and patients who are not clinically proven to have a radiographic evaluation of chest X-ray (6). By differentiating the patients with 1 and 2 and higher ASA classes, the number of chest radiographs can be reduced by 41% before surgery (3).

According to the studies regarding the need to perform preoperative chest radiographs for asymptomatic patients and considering the patient's time and cost and the system of healing and the harmful effects of radiation on the body, we decided to investigated the frequency of pre-operative abnormal chest X-rays in patients with class I and II ASA who are undergoing elective extra thoracic surgery.

MATERIALS AND METHODS:

This is a descriptive epidemiologic study conducted in Imam Khomeini Hospital in Ahvaz, Iran in 2010. The statistical population consisted of patients who underwent elective extra thoracic surgery in the surgery room of Imam Khomeini Hospital and they were selected based on history and clinical examination in class 1 and 2 ASA groups. For sampling and determining the sample size in this study, a questionnaire was prepared based on the name, age, sex and type of abnormal lesion in chest radiographs. In the patients selected for the surgery, the routine chest X-rays were previously examined by a radiologist and the reports were available in the file. This questionnaire was placed in the surgery room of Imam Hospital. After completing the sampling, the statistics were analyzed statistically. In addition, this questionnaire was completed only for patients with grade 1 and 2 ASA who were undergone extra- chest elective surgery. According to a study regarding the elective extra thoracic surgery, the likelihood of an abnormal lesion in the chest radiograph was 27%, which was considered P=0.50% with an approximation of 3. In this research, the data were analyzed based on the frequency in the spss11 environment.

RESULTS:

In this study, 323 patients referring for the extra thoracic elective surgery in class 1 and 2 ASA and chest x-ray were studied. Among these, 156 (48%) were male and 167 (52%) were female. 168 people (52%) had class 1 ASA and 155 people (48%) had class 2 ASA. 40 people (13%) were with the age of fewer than 45 years, 44 people (14%) were 46 to 55 years old, 78 people (24%) were 56 to 65 years old, 120 people (37%) were 66 to 57 years old, 38 people (12%) were 76 to 85 years old and 3 (0.009%) were over 85 years old. Abnormal findings were found in 112 patients (34%). 62 people of men (40%) and 50 of women (29%) had abnormal findings in chest radiography. 14 people (0.88%) of class I ASA and 98 people of class II ASA (63%) had an abnormal lesion in chest radiographs. In the age group of under 45 years, 0 (0%) had abnormal findings on chest radiographs, in the age group of 46 to 55 years old, 2 people (0.3%), in the age group of 56 to 65 years old, 2 people (0.3%), in the age group of 66 to 75 years old 71 people (60%), in the age group of 76 to 85 years old 34 people (90%) and the age group of older than 85 years 3 people (100%) were with abnormal findings on chest radiographs (table 1).

Table 1: Frequency of results of research variables

Gender	Number	Percentage
Male	156	48%
Female	167	52%
Frequency of Class I and II ASA		
Class I ASA	168	52%
Class II ASA	155	48%
Frequency of samples in different age groups		
Under 46 years old	40	13%
46 to 55 years old	44	14%
56 to 65 years old	78	24%
66 to 75 years old	120	37%
76 to 85 years old	38	12%
Over 85 years old	3	0/009

Frequency of abnormal lesions in chest radiographs in men and women				
	Normal		Abnormal	
	Number	Percentage	Number	Percentage
Class I ASA	154	92%/99	14	0%/08
Class II ASA	57	37%	98	63%

Frequency of abnormal lesions in chest radiographs in different age groups				
	Normal		Abnormal	
	Number	Percentage	Number	Percentage
Under 46 years old	40	100%	0	0%
46 to 56 years old	42	95%	2	5%
56 to 65 years old	76	97%	2	3%
66 to 75 years old	49	40%	71	60%
76 to 85 years old	4	10%	34	90%
Over 85	0	0%	3	100%

DISCUSSION:

In this present study, the abnormal findings in chest radiographs of males were more than that of females, which was consistent with the results of Scolino and Silverstree et al study. In this study, more abnormal findings were found in the age group above 65 years.

Lamers considered the age of over 40 years old, Scolano and Bioripaniou considered the age of over 45, Ganer considered the age of over 50 years old, and Silverstree and Garcia Miguel considered the age over 60 years old for the incidence of abnormal lesions and the need for chest radiography.

According to this study, the abnormal findings in chest radiographs are rare in patients with grade I ASA (0.08%) and the chest radiologic studies should be performed for patients with grade II ASA and over. This result was consistent with Lamers' studies, however, it was inconsistent with the study of SCL and Garcia, Miguel and Sylvester in those the chest X-rays were considered helpful for patients with grade III ASA or more (1, 5, 7, 8, 9).

Generally, this present study suggests that chest radiological studies are not helpful for women with class I ASA and under the age of 65 years.

CONCLUSION:

Considering the cost and harmful effects of radiographic radiation and the role of chest radiography in identifying cardiovascular and pulmonary diseases, a study is recommended to investigate the effect of detection of abnormal chest lesions in chest radiography before surgery on selecting the anesthetic procedure. Moreover, radiology for the ages less than 65 years old is not common, and it causes to waste the time, patient's expense, treatment system and harmful effects of radiation.

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