

Insight

Cost and Value of Screening Chest Radiographs in the Pre-Employment Examination of Kuwaitis

Muneera Al-Adwani¹, Adnan Abul², Deena Al-Refai¹

¹Radiology Department, Farwania Hospital, Kuwait

²Faculty of Medicine, Kuwait University, and TB Centre, Kuwait

Kuwait Medical Journal 2003, 35 (2): 126-127

ABSTRACT

To evaluate the benefits, harm and cost of pre-employment chest X-ray screening in the young asymptomatic Kuwaiti population. Since the use of chest X-ray in pre-employment examinations for an

asymptomatic population without any occupational respiratory risk is not recommended, the decision to conduct a chest X-ray should be based on indications.

KEY WORDS: chest X-ray, pre-employment, tuberculosis

INTRODUCTION

Since the 1930's chest X-rays have been routinely used to screen for signs of disease like tuberculosis (TB), however medical opinion is changing. Chest radiographs are no longer recommended to help screen for TB in a population who is without symptoms or risk factors for this disease entity. It is proposed that the use of chest X-ray should not be obtained routinely as part of pre-employment examination considering the high cost of routine chest X-rays, and the unnecessary radiation exposure for the young asymptomatic population.

PATIENTS AND METHOD

Data was collected over a five-year period from 1996 to the year 2000, from three major referral centers: The TB Center, Sharq and Rashid Health Centers. The population screened included young healthy individuals between the age of 20–32 years with no history of previous exposure to tuberculosis. Postero-anterior, high KV chest radiographs using 14 x 17 cms conventional films were used as part of their pre-employment evaluation.

RESULTS

It was found that the percentage of the population screened for pre-employment who were then referred for further evaluation to exclude tuberculosis was < 0.3%. (Table 1). Ninety-eight percent of this population was found to be less than twenty-six years of age. The implementation of the proper technique for obtaining high KV chest

radiographs resulted in a lower radiation exposure.

DISCUSSION

The chest X-ray is one of the most frequently used radiographic examinations in this country and one of the greatest contributors to health care costs. It is still common to have a chest X-ray as part of pre-employment screening and routine physical check up. The results of screening programs for tuberculosis^[1,2] demonstrated that Chest X-rays are no longer recommended to help screen for TB in a population without symptoms of disease or without risk factors for developing the disease thus changing the approach to medically evaluate this population in pre-employment screening programs. The high cost of routine chest X-rays combined with the low percentage (less than 0.2-0.3%) in Kuwait, of TB identified through pre-employment screening, no longer makes it a viable screening tool (Table 1).

Instead, it has been demonstrated that careful medical history and physical examination yields the best results in the asymptomatic population. With today's technology the low levels of radiation associated with chest X-rays pose little risk. Still it makes sense to avoid unnecessary X-ray exposure in young Kuwaitis who continue to be subjected to routine pre-employment chest radiograph.

The possible benefits of screening chest radiographs in persons without symptoms include the detection of unsuspected significant abnormality which would allow early treatment and medical intervention with a subsequent

Address correspondence to:

Dr. Muneera Al-Adwani, Radiology Department, Farwania Hospital, Kuwait. Tel.4893314 - E-mail: rad_mun123@hotmail.com

Table 1

Statistical data of the patients exposed to pre-employment chest radiographs examination in TB Centre, Sharq and Rashied Centres between 1996 to 2000

Year	Male Patients No.	Need further investigation	Female Patients No.	Need further investigation	No.	Total Referred cases to TB Centre for further evaluation	% of Referred cases
1996	8087	0	2234	0	10321	0	0.00
1997	8686	23	2525	13	11211	36	0.3
1998	6744	20	3847	13	10591	33	0.3
1999	16139	23	8696	6	24835	29	0.12
2000	16635	18	9225	10	25860	28	0.11
1996-2000					82818		0.1

improved outcome. However the decision to order a chest X-ray should be based on clinical judgment rather than it being done in a routine fashion.

The harmful effects include the exposure of patients to unnecessary radiations and to further tests or procedures when there is follow-up of a false positive chest X-ray. Although the harm evoked from a single chest radiograph could be described as being negligible with respect to the amount of radiation exposure, it is the series of unnecessary test, procedures and interventions that may be triggered in the follow-up of a false positive chest radiograph that is more harmful than the chest X-ray itself.

The calculated cost for a single processed chest radiograph is approximately ten Kuwaiti Dinars (KD). For the last 5 years, i.e. from 1996 to 2000, more than 82,818 chest radiographs of the young, asymptomatic and risk-free Kuwaitis were done at three centers as part of the pre-employment screening program at a cost of more than KD 82,818. More than 98% of those screened were less than 26 years of age.

CONCLUSION

The use of chest X-rays in pre-employment examinations for an asymptomatic population who is not at any occupational respiratory risk, is not recommended.

The proposal that the use of chest X-ray should not be done routinely on young asymptomatic population who will not be exposed to any occupational respiratory risk is based on results from some of the international screening programs^[2,3,4]. The decision to include a chest X-ray in the screening program should be based only on information obtained from a careful history and physical examination.

REFERENCES

1. British Columbia Council on Clinical Practice Guidelines: Chest X-rays in asymptomatic adults, October 1996.
2. Health Services Utilization and Research Commission: Selective chest radiography guidelines review, July 2000.
3. Guideline Health Reduce X-ray Hazards, University of Alabama at Birmingham 1998.
4. Guidelines for Chest X-rays in asymptomatic population Developed by: McMaster Diagnostic Imaging Practice Guidelines Initiative 1999.