FRANZBLAU A, WERNER RA, YIHAN J.
Preplacement nerve testing for carpal tunnel syndrome: is it cost effective? J Occup Environ Med. 2004 Jul;46(7):714-9.

Is not hiring otherwise-qualified workers who have an abnormal post-offer preplacement (POPP) median nerve test a cost-effective strategy to reduce workers' compensation expenses related to carpal tunnel syndrome (CTS)? We performed a retrospective dynamic cohort study based on 2150 workers hired at a company between January 1996 and December 2001 and who underwent POPP median nerve testing. Workers were followed until they left the company or until follow-up ended in May 2003. Results: Thirty-five cases of work-related CTS occurred during follow-up, and 9.13 cases could have been avoided. However, if the company had not hired workers with abnormal POPP nerve test results, it would have suffered a net loss of $357,353. Conclusion: Not hiring workers with abnormal POPP nerve tests to reduce costs of work-related CTS is not a cost-effective strategy for employers.

Discussion: *Cost-effective? How about ethical? How do they know the 9 cases could have been avoided? The mean tenure of those with abnormal POPP nerve test results did not differ from those with normal nerve conduction pre-employment. In the introduction the issue of whether denying employment to those with slowed median nerve conduction is legal, with respect to the Americans with Disabilities Act, this was not further addressed. And it won't be, given the decisive result economically against such testing.*

THORNE CD, KHOZIN S, MCDIARMID MA.
Using the hierarchy of control technologies to improve healthcare facility infection control: lessons from severe acute respiratory syndrome. J Occup Environ Med. 2004 Jul;46(7):613-22.

Health care facilities need to review their infection control plans to prepare for the possible resurgence of severe acute respiratory syndrome, other emerging pathogens, familiar infectious agents such as tuberculosis and influenza, and bioterrorist threats. This article describes the classic "hierarchy of control technologies" that was successfully used by occupational and environmental medicine professionals to protect workers from illness and death during the resurgence of tuberculosis in the 1990s. Also discussed are related guidelines from building and equipment professional organizations and novel infection control techniques used successfully by various hospitals in Asia, Canada, and the United States during the 2003 severe acute respiratory syndrome epidemic. Taken together, they suggest a framework upon which a comprehensive infection control plan can be crafted to prevent the spread of deadly infectious agents to health care workers (clinicians and paraprofessionals), uninfected patients and visitors.

Comment: *Lots of good practical experience and advice here: engineering controls, work practices and education with PPE as a supplement.*

ARTICLES

Previous asthma and methacholine reactivity in defence force recruit screening.*

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ABSTRACT

Screening for bronchial asthma remans a difficult but important aspect in the evaluation of health in potential recruits for the Australian Defence Force (ADF). Current regulations allow acceptance of subjects with a past history of asthma but who have been asymptomatic and have not required treatment for three years. Bronchial challenge tests may be used in an attempt to clarify a doubtful diagnosis. The findings of methacholine reactivity assessment in a group of 310 potential recruits referred for a consultant opinion have been examined.

Despite being asymptomatic and demonstrating normal spirometry, half the group showed an abnormal degree of reactivity with 17% having brisk reactivity. Importantly, 17% of a group currently acceptable under current regulations showed brisk reactivity. In determining whether the current guidelines are appropriate, it is essential to determine the subsequent service record of those recruits with persisting brisk reactivity who commence military service.

KEYWORDS

asthma recruit screening bronchial reactivity

INTRODUCTION

Current standards for health in recruits in the Australian Defence Force are high. The presence of asthma is a cause for rejection given the high incidence of morbidity from this condition under a variety of adverse environments. Whilst the diagnosis of current active asthma does not usually present a problem, the situation with regard to recruits with a past history of asthma is unclear[1]. This is especially complicated by the fact than many cases of childhood asthma appear to remit in the teenage years and some of those cases will relapse in later life.

Screening for asthma at the recruit medical assessment stage therefore should try to maintain a high level of fitness and health in those recruits accepted by detecting active asthma and recognising those applicants with a recognised potential for developing asthma under certain circumstances.

Since bronchial asthma represents the inflammatory modulation of intrinsic bronchial reactivity to a degree that causes symptomatic airflow obstruction, the assessment of bronchial reactivity has been used as a means of detecting an underlying asthmatic situation. Potential recruits who are referred for a consultant opinion as to the presence of or likelihood of developing asthma often have an assessment of bronchial reactivity in an attempt to provide a scientific basis for an opinion.

This paper analyses the findings in 310 potential recruits referred for an opinion concerning asthma in whom methacholine inhalation was used to assess bronchial reactivity.

MATERIALS AND METHODS

The potential recruits were mainly referred by the medical officers of a Recruiting Unit (usually ADFRU-Melbourne) between 1995 and 2002. Of the 310 subjects, 63 were female. The mean age was 20.2 years with a range of 16 to 46 years. A brief cardio-respiratory history was taken and physical examination and basic initial spirometry using standard techniques were performed. Reactivity to methacholine aerosol was carried out using the

*Presented at the 12th Annual AMMA Conference, Adelaide,October 2003. (Weary Dunlop Award winner)1

established technique of the laboratory. This involves a vital capacity inhalation and a three second breath-hold of a saline aerosol as a control and then methacholine hydrochloride in saline solutions of increasing concentration from 0.25mgm/ml to 50mgm/ml. The aerosols were generated from Hudson™ nebulisers driven by oxygen at 8 litres/min. The FEV1 was recorded three minutes after each inhalation. From these data points a dose response curve of FEV1 and methacholine concentration was derived and the concentration of methacholine to produce a 20% fall in FEV1 computed and expressed as the PC20. Bronchial reactivity was classified as absent (PC20 >50mgm/ml),moderate (PC20 4-50 mgm/ml),brisk (PC20 <4mgm/ml) and very brisk (PC20< 1mgm/ml).

On the basis of past history, the presence or absence of symptoms and use of anti-asthma medication, the subjects were divided into the following groups:

A. Definite past history, current symptoms, medication within three years (n=24)
B. Definite past history, no symptoms or medication within three years (n=167)
C. No past history, suggestive symptoms, no medication use (n=5)
D. No past history, suggestive symptoms and medication within three years (n=4)
E. Exertional symptoms only, no medication (n=25)
F. Exertional symptoms only, medication used (n=9)
G. Allergic rhinitis, vague breathlessness, medication used (n=8)
H. Allergic rhinitis, vague breathlessness, no medication (n=16)
I. Vague history, no current symptoms, no medication (n=41)
J. Vague history, no current symptoms, medication used.(n=11)

RESULTS

All subjects had a normal physical examination and normal initial spirometry. Sixty-four subjects (21%) admitted to cigarette smoking.

In 156 subjects (50%), methacholine reactivity was considered to be absent. In 103 subjects (33%) reactivity was moderate and in 51 subjects (17%) it was brisk with 15 of those subjects (5% of the whole cohort) exhibiting very brisk reactivity. The distribution of bronchial reactivity within the subgroups is shown in the table . This shows that instances of brisk or very brisk reactivity could be demonstrated in all asymptomatic subgroups. In Group B. 78 subjects (47%) showed absent reactivity and 23 subjects (14%) showed brisk reactivity.

DISCUSSION

Current guidelines allow subjects with a past history of asthma and no medication requirements or symptoms for three years to be accepted for enlistment. Since about 10% of a “normal” population demonstrate reactivity in the PC20 8-50mgm/ml range, bronchial reactivity alone is not a basis for rejection except for specialised branches of service such as submariners, divers and surface finishers.

All of the members of Group B would meet the current standards for acceptance since they had been asymptomatic for three years with no medication requirement and yet 23 (14%) had persisting bronchial reactivity well into the asthmatic range and a further 40% had moderate reactivity. It would be logical to consider those subjects with persistently elevated reactivity at increased risk of relapse in appropriate circumstances such as exposure to bronchial irritants or stress. Those of group B who demonstrated an absence of reactivity have presumably a low risk of relapse. Within their number may be some in whom the original diagnosis of asthma was incorrect.

Exertional wheeze was the reason for referral in 34 subjects (groups E and F). Bronchial reactivity was brisk in only 6 subjects suggesting that in this group, mechanisms other than asthma were operating. Methacholine is thought to act as a non-specific bronchial smooth muscle constrictor. Factors leading to bronchial mucosal swelling such as oedema would cause exertional wheeze in the presence of a negative methacholine response. Such swelling may have an allergic basis (“bronchial eczema”) or result from abnormalities in circulatory control.

Subjects with allergic rhinitis are well recognised as often having elevated bronchial reactivity and of the 24 subjects in this sub-group, 11 demonstrated some degree of elevation although only one subject had brisk reactivity.

Bronchial challenge procedures are not “asthma tests”. Depending on the provoking agent used, they may provide information about airway inflammatory processes or bronchial muscle dysfunction [2] . Methacholine is non-specific since several conditions other than asthma have been shown to have increased methacholine reactivity [3,4]. It is thought to provide some insight into the likelihood of inducing broncho-constriction upon exposure to dusts, fumes, respiratory infections, severe exertion or stress and as such should have a role in screening for respiratory health.

It remains unclear as to whether the current guidelines are appropriate or need modification. Are they too liberal or too strict? The US Department of Defense appears to be considering more rigorous criteria for subjects with a past history of asthma [5]. The need for modification could be clarified by considering the subsequent service record of those subjects with a past history of asthma and persistently elevated bronchial reactivity who were accepted for enlistment under the current regulations.

CONCLUSION

This study raises a number of issues concerning the role of bronchial reactivity testing as part of recruit screening for applicants with a past or suggestive history of bronchial asthma. Before tightening or relaxing the present guidelines, the subsequent service performance of those successful applicants with persisting bronchial reactivity requires examination.

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TABLE

The distribution of reactivity to inhaled methacholine aerosol in 310 recruits grouped according to clinical status. See text for classification of Groups A to J and for definitions of degree of reactivity.

		Absent	Moderate	Brisk	Very Brisk
Group	A	4	8	12	5
	B	78	66	23	5
	C	2	0	3	1
	D	2	1	1	0
	E	17	3	5	2
	F	4	4	1	1
	G	5	2	1	0
	H	8	8	0	0
	I	29	7	5	1
	J	7	4	0	0

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