Asthma In The Army: 1985-1996

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SUMMARY: Based on comparison between data obtained on medical discharges from the Army due to asthma for 1985 and for 1994-1995, this study shows that the current Army policy on asthma and recruiting is effective but could be improved. Plans aimed at improving the current screening programme are introduced.

Introduction

Childhood wheeze, which may or may not be labelled asthma, is common. Symptoms usually settle around the time of puberty and in most cases there is no recurrence. A significant minority of these individuals, however, will develop recurrent symptoms of asthma in their late teens and early twenties, usually necessitating treatment and limiting physical activity.

The development of asthma in a soldier usually causes a reduced ability to cope with vigorous physical exercise and extreme environmental conditions, thereby rendering him less effective in his work. Dependant on severity it may eventually lead to discharge from the Service. Thus the individual loses a career and the Army loses a trained soldier.

Most recruits into the Army are enlisted between the ages of 16 and 19, when asthma may be in remission. In order to reduce the likelihood of later problems, potential recruits with current asthma are rejected for service while those with a history of asthma, but asymptomatic for at least 4 years, are screened by specialist referral and exercise vitalography to determine their fitness for military training and service (1).

This study examines whether the standardisation and rigid application of such screening over the last 10 years has had any impact on the pattern of discharges from the army due to asthma. The current practice and results of screening within one Ministry of Defence Hospital Unit (MDHU) are reviewed and future plans are introduced.

Subjects and Methods

Medical discharge papers and recruitment medical papers were obtained from the Medical Statistics branch of the Ministry of Defence for all medical discharges from the Armed Services coded for asthma over a 15 month period. These records were analysed for age and rank at discharge, length of service, history of childhood asthma at recruitment and any action taken, family history of asthma, pre-enlistment history of hay fever or eczema, smoking history, weight on recruitment and discharge and medication on discharge. Results were compared to those obtained by Dickinson in a similar study relating to discharges in 1985 (2).

All exercise vitalographs performed in the Physiological Measurements Department at the MDHU at Frimley Park Hospital during 1996 were obtained. All were conducted according to the unit protocol outlined in Figure 1. They were analysed for resting Forced Expiratory Volume in 1 second (FEV₁), Exercise Lability Index (ELI) and, for potential recruits, whether they were accepted or rejected for service.

Results

Fifty eight sets of records of medical discharges for asthma were obtained covering the 15 month period 31/07/94 to 24/10/95 of which 42 related to Army personnel (11 were Royal Navy including 2 Royal Marines and 5 were Royal Air Force). Of the Army personnel 39 were male and 3 female. Three sets

1. Standard Bruce protocol stages.
2. 4 minute warm-up to achieve maximum heart rate (MHR, 220 - age).
3. 2 minutes at MHR.
4. Record FEV₁ at 0,1,3,5,7,9,12 & 15 mins.
5. Reversibility with Salbutamol at 15 min if relevant.
6. Calculate Exercise Lability Index (ELI):
Highest FEV₁ - Lowest FEV₁/Resting FEV₁
7. Positive at ELI ≥ 15%

Fig 1. Exercise Vitalograph Protocol.

of records were inadequate for analysis.

The rate of discharge for asthma during this period was 2.80 per month compared with 4.19 per month seen in 1985. These form 3.8% of all medical cause discharges compared with 6.3% in 1985.

The distribution of age at discharge has shifted upwards (Fig 2) with the mean age now being 22.4 compared with approximately 20.5 in 1985. Similarly the length of service prior to discharge has increased from a mean of 3.6 to 4.2 years (Fig 3). All of those discharged were junior ranks with 85% being recruits or private soldiers.

Fig 2. Age at Discharge

In 1985, 54% of those discharged gave a history of pre-enlistment asthma of whom 33% had not declared their history at the time of enlistment. In this study only 7 (18%) of those discharged gave a history of pre-enlistment asthma of which 3 had been undisclosed at enlistment, 1 had no symptoms for over 4 years, 1 had had symptoms and was not referred and 2 had been referred for specialist opinion and had been passed fit.

Thirty one percent gave a family history of asthma (49% not recorded), 36% were current or past-smokers (56% not

Fig 3. Length of Service

recorded) and 19% gave a positive personal history of hay fever and/or eczema. The mean body weights at recruitment and discharge medicals were 64.7 Kg and 75.4 Kg respectively representing an average increase of 16.5% during service. Medications being taken at the time of discharge are shown in Table 1.

In the small numbers of Royal Navy and Royal Air Force personnel discharged the mean ages (29.82 and 28.2) and length of service (10 and 9.2 years) at discharge were notably greater than the figures for Army personnel.

In 1996 a total of 198 people - 47 serving soldiers and 151 potential recruits, underwent exercise vitalography at MDHU Frimley. The results of these tests are summarised in Table 2. Of the potential recruits 9.9% had an Exercise Liability Index in excess of 15% (the accepted "positive" level) of whom 60% were rejected for enlistment with the remainder being deferred for repeat testing or accepted on the basis of atypical results or exceptional exercise performance.

Table 1
Prescribed drugs at time of discharge

DRUG	NUMBER	%
Inhaled Bronchodilator	28	93
Inhaled Steroid	29	97
Oral Steroid	2	7
Salmeterol	1	3
Other	1	3
Not Known	9	23

Table 2
Exercise Vitalographs at MDHU Frimley - 1996

	POSITIVE (%)	NEGATIVE (%)	TOTAL
POTENTIAL RECRUITS	15(10)	135(90)	150
SERVING SOLDIERS	17(35)	31(65)	48

Discussion

The current Armed Services policy on recruitment and asthma was last updated in 1986 and states that "Asthma is essentially incompatible with Service requirements" and calls for the rejection of candidates with current asthma or symptoms within the previous 4 years and assessment, by exercise testing, of those with a less recent past history (1).

Exercise testing is a safe and validated diagnostic test for

exercise induced asthma (3,4) and a standardised treadmill test was introduced into recruit screening in 1979 (5). Prior to 1986 the regulations only recommended that a consultant opinion should usually be sought and made no specific mention of exercise testing. Following efforts to define the most sensitive test (6,7) the previously described maximal heart rate (MHR) treadmill test is currently used. Since the more rigid application of this policy, potential recruits have been questioned more closely than previously to elicit any history of asthma, many more have been referred for specialist opinion and exercise testing (personal observations - Army Chest Unit).

The total number of soldiers discharged with a diagnosis of asthma has decreased since 1986. This may partly reflect the reduction in Army manning over this period but the proportion of medical cause discharges attributed to asthma has also decreased by 40%. Of particular note is that the reduction in discharges is most marked among the youngest age groups where relapse of childhood asthma is the most likely explanation for the development of symptoms during service (8). This is further illustrated by the 30% reduction in the numbers discharged in the first 3 years of service.

Increased screening has resulted in a 67% decrease in the proportion of those discharged who admit, at the time of discharge, to a pre-enlistment history of asthma. The failure of potential recruits to disclose their history, however, is still a significant problem remaining unchanged at 33% of those giving a positive history at the time of discharge.

In conclusion it would appear that the current Army policy on asthma and recruitment is a relatively successful tool in reducing the number of soldiers suffering relapse of childhood asthma and subsequent discharge from the Service. The cost, however, has been an increasing demand for exercise testing with many potential recruits referred on the basis of minimal symptoms such as single episodes of bronchospasm associated with infection (personal observations - Army Chest Unit). The introduction of a questionnaire sensitive to personal and family history is one proposal that is being examined in an attempt to improve the selection of those to be tested.

It is currently planned to relocate the assessment of potential Army recruits with a history of childhood asthma to Recruit Selection Centres where free-running tests, which have been validated (9,10) and are more relevant to military populations, will be used. A detailed protocol is being finalised and it is planned to perform a continuous audit of the testing and to attempt to follow-up those tested through their military careers to gain further insight into the morbidity caused by asthma in the Army.

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