

Poland's Syndrome And Military Personnel

PM Phaltankar, J Langdon, J Clasper

ABSTRACT

We describe three cases of undiagnosed Poland's syndrome in Army personnel and discuss their fitness according to the PULHHEEMS system. This syndrome has variable clinical features that include unilateral chest wall and upper limb abnormalities. The syndrome is not hereditary and is of unknown origin. If the syndrome was diagnosed prior to enlistment the potential recruit would normally be graded P8, and unfit to enlist. However, these individuals had managed to pass routine medical examination as well as successfully complete basic training. The suitability of continuation in the army of personnel with Poland's syndrome is discussed.

Introduction

The term Poland's Syndrome has been used to describe a group of anomalies which include congenital thoracic abnormalities with hypoplasia of the upper limb and syndactyly (1,2,3). The most noticeable feature is the absence of pectoralis major (Figure.1). The clinical manifestations of Poland's syndrome are extremely variable and rarely are all the features recognized in one individual (4). The thoracic anomalies include hypoplasia or absence of the breast or nipple, absence of costosternal portion of the pectoralis major muscle, absence of the pectoralis minor muscle, absence of costal cartilages or ribs 2, 3 and 4. Anterior axillary fold contracture and elevated scapula may be seen. Severe thoracic deformities like pectus carinatum, pectus excavatum, scoliosis, herniation of the lungs occur rarely. The upper limb manifestations most frequently include hypoplasia of the arm, forearm and the hand (2,3,5,6). Syndactyly, which may involve all the fingers and the thumb, is less prevalent and is usually incomplete and simple (7). This variability in severity and, therefore, appearance can make diagnosis difficult (8).

If Poland's syndrome was diagnosed prior to enlistment, the potential recruit would normally be graded P8. We report 3 undiagnosed cases that presented to us in military personnel. They had all been graded P2FE at enlistment medical and all successfully completed basic training. In addition 2 considered that their upper limb problems did not functionally impair them. This then poses the question, what is the correct medical grade for such personnel?



Fig 1. Well developed pectoralis minor with absent of pectoralis major.

Case 1

MP – Nineteen year old male, an infantry soldier for eighteen months.

Presented with discomfort in upper back and right shoulder, with slipping of his webbing whilst on exercise. To minimize the slipping he was tightening his Bergan, leading to altered sensation in the arm. He had experienced no problems until he commenced intensive pre-Northern Ireland training (PT/ CFT/ webbing and bergan runs).

As a child he had noticed his chest to be of a 'funny' shape and had managed to hide it by wearing a tee shirt. He was unaware of the significance of the problem as he had no functional limitations. During routine enlistment medicals no abnormality was noted and he passed P2 FE.

However, on examination pectoralis major was absent, but was well compensated by a pectoralis minor muscle far bigger than in a normal individual (Figure 1). Serratus anterior muscle was absent leading to winging of the scapula (Figure 2). He had a slightly shortened humerus and a short hand. His overall functional ability and strength was excellent.

The underlying disorder was explained, and the option of treating the cosmetic chest deformity with chest implants was discussed but he was not particularly troubled by the cosmetic aspect of the problem. He was given advice about modifying the way he wore his Bergan (for example, with a cross-strap).

In view of his overall level of fitness and lack of previous problems he was considered fit and graded P2 L2 FE, although this might be considered controversial.

PM Phaltankar MS
(Orth), D.Ortho, FRCS
(Tr & Orth)
Specialist Registrar in
Trauma and
Orthopaedics

J Langdon MB BS BSc
Senior House Officer in
Trauma and
Orthopaedics

JClasper DPhil DM
FRCSed (Orth)
Consultant Orthopaedic
Surgeon
E-mail: jclasper@aol.com

Department of
Orthopaedics,
Frimley Park Hospital,
Portsmouth Road,
Camberley, GU16 7UJ



Fig 2. Winging of the scapula due to absent serratus anterior muscle.

Case 2

AH – Eighteen year old male, an infantry soldier for eight months

Presented with inability to carry a loaded bergan. He stated that he always found fitness tests difficult due to the arm going weak.

On examination the pectoralis major was absent. He had short, thin fingers with overall shortened hand on the same side. He had good overall function of the hand.

Muscle transfer procedures and cosmetic chest implants were discussed and he was referred to a suitable plastic surgeon for further advice regarding this.

It was thought that he was not fit to be a front line infantry soldier and alternative suitable employment in the army (for example, to train as a dog handler in which he expressed an interest) was suggested. He was graded as P3 L3 LE, and it was felt that he would have no further trouble given this grade.

Case 3

LS – Twenty one year old male, a gunner for four years.

Presented with a painful right shoulder. He was diagnosed as having impingement of the rotator cuff, for which he underwent arthroscopic division of the coraco-acromial ligament. He made good recovery following this.

He was incidentally noted to have absent left pectoralis major muscle. No other abnormality was detected in his left upper limb. This defect caused him no problems.

He was referred to plastic surgery for consideration of chest implants. He was graded as P3 U3 LE while recovering from the surgery, and was then upgraded to P2 L2 FE, with no subsequent problems.

Discussion

Alfred Poland first described the association of congenital thoracic anomalies with ipsilateral syndactyly (1) in 1841, after dissecting a male cadaver at Guy's Hospital. The cadaver lacked the sternocostal head of the pectoralis major, while the serratus anterior, the external oblique, and the muscles of the left arm were hypoplastic. The condition was referred to as Poland's syndactyly by Clark-

son in 1962 (2), although it had been observed by many authors prior to this (2,5,6). The more accurate term 'Poland's Syndrome' was used in 1967 by Baudinne and co-workers (3). The incidence of Poland's syndrome varies between groups (male versus female patients, congenital versus familial cases, and so on) and ranges from 1 in 7000 to 1 in 100,000 live births (9). Up to 9% of patients with complex and simple syndactyly may have underlying Poland's syndrome (8).

We have described three cases of Poland's syndrome in the Army that were referred to us with varying presentations. Though full-blown Poland's syndrome will rarely be encountered by Army medical personnel, it is important to be aware of the syndrome as mild varieties of the syndrome present with a wide spectrum of subtle clinical features. Many cases present with very little functional impairment. If appropriate the cosmetic problem due to abnormal chest contour can be assessed by a plastic surgeon. The deformity can be addressed by latissimus dorsi muscle transfer or chest implants (10).

All the cases of Poland's syndrome seen by us were referred to us when the individuals were already serving in the army. All had passed basic medical examination, which included their chest being auscultated, on at least 3 occasions. All had completed basic training which included swimming, runs with and without bergans up to 50 lbs. and passed Basic Physical Fitness Assessment (BPFA).

If the underlying Poland's syndrome had been detected in these individuals initially they would not normally have been accepted into the Army. We feel that since they have been accepted, passed all the assessments and completed their basic training, they should not be penalized for no fault of their own, as they were unaware of the significance of their condition. We would suggest that all such cases should be assessed and judged on an individual basis regarding their fitness and suitability to continue in their present jobs. In some cases suitably different jobs in the Army can be offered to these individuals to continue their employment with the army. This solution will in fact be beneficial to both such individuals with Poland's syndrome as well as the Army. This then leads us to question the pre-enlistment grade of such personnel as P8. One possible solution may be a full functional assessment at a recruitment training depot, and correct medical grading based on this.

References

- 1 Poland A. Deficiency of the pectoralis muscles. *Guy's Hosp. Rep.* 1841; 6: 191.
- 2 Clarkson P. Poland's syndactyly. *Guy's Hosp. Rep.* 1962; 111: 335-46.
- 3 Baudinne P, Bovy GL, Wasterlain A. Un cas de syndrome de Poland. *Acta Paediat. Belgica* 1967; 32: 407-10.

- 4 Pers M. Aplasia of the anterior thoracic wall, the Pectoral Muscles, and the Breast. *Scand J Plast and Reconstr Surg* 1968; 2:125-35.
- 5 Brown JB, McDowell F. Syndactylism with absence of pectoralis major. *Surgery* 1940; 7:599-601.
- 6 Christopher F. Congenital absence of the pectoral muscles. Case report. *J. Bone and Joint Surg* 1928; 10: 350-51.
- 7 Velasco JG, Broadbent TR, Woolf RM. Syndactylism. *British J Plast Surg* 1967; 20: 364-68.
- 8 Ireland DCR, Takayama N, Flatt AE. Poland's syndrome. A review of forty three cases. *J. Bone and Joint Surg [Am]* 1976 ; 58-A: 52-8.
- 9 Fokin AA, Robicsek F. Poland's syndrome revisited. *Ann Thorac Surg* 2002; 74(6): 2218-25.
- 10 Hodgkinson DJ. Chest wall implants: their use for pectus excavatum, pectoralis muscle tears, Poland's syndrome and muscular insufficiency. *Aesthetic Plast Surg* 1997; 21(1): 7-15.