



AUSTRALIAN MILITARY MEDICINE

July 1995

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The official journal of the Australian Military Medicine Association

Apologies for the delay in the issuing of this journal. This was caused due to a publication difficulty.

The Editor

Australian Military Medicine

Volume 4 Number 2

July 1995

Patron: Major-General D.G. Rossi, AO RAAMC, Surgeon General,
Australian Defence Force
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Australian Military Medicine Association

Statement of Objectives

The Australian Military Medicine Association is an independent, professional scientific organisation of health professionals with the objectives of:

- promoting the study of military medicine
- bringing together those with an interest in military medicine
- disseminating knowledge of military medicine
- publishing and distributing a journal in military medicine
- promoting research in military medicine

Membership of the Association is open to doctors, dentists, nurses, pharmacists, paramedics and anyone with a professional interest in any of the disciplines of military medicine.

The Association is totally independent of the Australian Defence Force.

Editorial

How is the ADF to retain health professionals?

We are constantly told by our military leaders that people are our most valuable resource. Nowhere is this more true than in the area of the health professions.

The health professional is the health profession. The health professional is a highly trained individual in whom society, as well as the ADF, has made a considerable investment. It is not an investment that can be discarded lightly.

Elsewhere in this issue, the progress so far towards the development of tertiary based qualifications in military medicine are reported. This progress is to be applauded, but is it enough?

No one would argue that military health care providers are specialists in their own right. However, is a Masters in Military Medicine something which will attract and retain health professionals?

Most of us know that the inevitability of almost any military health career leads to administration, and lots of it. This is not the interest of the bulk of health care professionals, who almost invariably enter their chosen career with thoughts of clinical contact uppermost. Some, for want of a different challenge, accept the administrative change with contentment, but for others (possibly the bulk?) the increasing encroachment of administration into their time leads them to other paths which diverge from the ADF.

How do we keep the enthusiastic young health care practitioner, who has a wealth of clinical experience which we expand in specifically military orientated areas? We are not large enough (even as combined Services) to support the uniformed clinical infrastructure maintained by the US or UK Defence Forces, which provide their clinicians with a career path which only in the very last stages involves an abandonment of clinical medicine. But to keep our clinically orientated young members, we must offer something similar, or risk losing them.

Losing this talent costs us in the long term also, since we have a requirement for specialist clinicians to support our higher level health support functions - Field Hospitals, Primary Casualty Reception Ships and the like.

We must therefore establish a structure that allows the retention of those wishing to pursue a purely clinical career, whilst acknowledging the limitations imposed on this by the small nature of our permanent force.

A more radical use of the Reserves could be one way of achieving this. Our specialist health care providers almost exclusively are drawn from the Reserves. Many have had previous service in the Permanent Forces, but have left to pursue their specialty. Is there some way we can harness the Reserves, integrating them with the Permanent Forces, to provide a complete health service?

Perhaps we should encourage our interested young health personnel to pursue a clinical specialty, with the ADF supporting their training, and then recouping that investment by way of part-time service in ADF health facilities and a commitment to be available for operational deployment.

For instance, a naval medical officer, interested in surgery, is supported (in part or full as necessary) through his six years' surgical training by the Navy. On achieving specialist qualification he has a return of service obligation of, say, four years. This could be recouped by part time service at Balmoral Naval Hospital of one-and-a-half days a week for the subsequent 12 years. The rest of his time he can devote to practice in the civil community.

A further development might see a shared-employment arrangement with a local public hospital. The endowment of training positions in hospitals could also be used as an alternative training approach.

This is a radical concept, but has been, in part, utilised on an *ad hoc* basis by each of the Services in the past. It could be modified to suit the requirements of all health care professions. It would help to retard the loss of experienced personnel. It would give us a sure source of specialist personnel for both operational and non-operational support. It would also be a positive recruitment incentive.

It deserves consideration.

Russ Schedlich

Letter to the Editor

A case of injured legs and recovering relations

Dear Sir,

I write in praise of our Vietnamese colleagues, especially to laud their kindness, skill and compassion shown to an injured Australian colleague.

In early July 1994, I was working voluntarily at Tan Phu Hospital in Dong Ngai province, Vietnam. After a day's work, I decided to play volleyball with the local staff to foster further the growing *entente* between our two countries.

Alas, and let this be a mortal reminder to those of us who are in our 50s and think we are still in our prime of life, my Achilles tendon snapped, classically.

I had just landed after tipping the ball across the net when, bang! I thought some spectator supporting the opposition had thrown a stone at high velocity against the back of my right ankle.

I turned around to see who it was, and then found myself on the ground writhing in agony.

I was hauled off to my quarters and within a couple of hours the local young orthopaedic surgeon was there with several other doctors.

A very sturdy plaster was applied and I was supplied with crutches, suitably modified for an Australian.

I carried on with my work there, and on leaving donated my manual of medicine to their library.

Four days later I was living and working in the hamlet of Gao Ro, just north of Phu Ngoc, in the country.

One morning I was attempting to enter the clinic where I was living with two Vietnamese doctors and a nurse, and lost my balance trying to negotiate the high sill that forms the lower part of the doorways in Vietnam and China - supposed to keep out demons and ghosts and, in this case, Bill George.

I fell over backwards, my crutches flying through the air and my left leg doubling back, hyperflexed, beneath me. I landed in a heap in great agony, having ruptured my left quadriceps femoris tendon, just proximal to the patella.

My colleagues organised an ambulance. One of them, an old friend Dr Giao, accompanied me to Ho Chi Minh City, to the centre of orthopaedics and trauma.

I was examined by a young orthopaedic surgeon, Dr Si. After x-rays of knee and ankle, which were thankfully okay, a sugar to tongue plaster was applied with great skill and I was admitted to the emergency ward, a vast air conditioned room lit day and night and containing about 20 beds full of people with multiple ills and traumas.

Dr Giao slept next to me and attended to my every want day and night. This included my basic needs such as changing my bed pan, washing me and getting me food and drink. He was my saviour.

Later the next day I was transferred to a lovely old French colonial villa owned by Dr Qynh Hoa - my *raison d'être* - whom I was helping in Vietnam.

At the villa I was ensconced in a huge bed with mosquito netting, and had an elderly concierge to do my cooking, washing and ironing, and a young laboratory assistant, from the paediatric centre in Ho Chi Minh city, to attend to my every need.

I wanted for nothing, although unable to move from the bed for a week.

Dr Si visited me twice to assess my progress - a rare privilege, even in Vietnam, and unheard of here in Australia (domiciliaries seem to have disappeared).

I was eventually transferred back to Australia by wheelchair, stretcher and ambulance via Manila, and have been hard at work here since, although confined to my surgery except for a home visit on crutches.

I would like people to know the Hippocratic spirit is alive and very well in Vietnam, and also what a wonderful people they are.

B.S. George

CONTRIBUTIONS

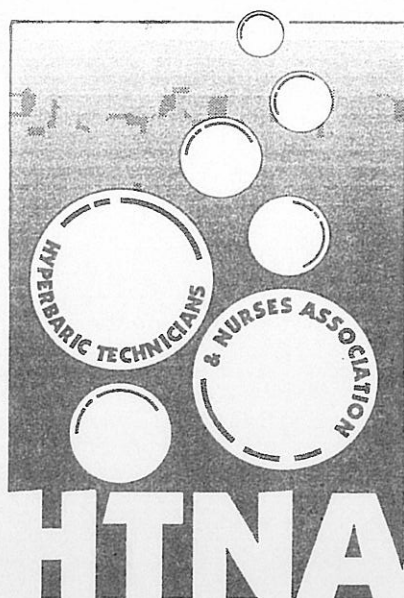
the November issue should be sent to:

The Editor
Australian Military Medicine
PO Box 730, PYMBLE NSW. 2073

Deadline is 20 October 1995.

As the number of contributions are gratifyingly increasing, contributors of articles are requested to provide a minimum of two copies double spaced. Additionally, submission of an electronic copy on a 3.5 inch floppy disc, to a standard word processing programme (WordPerfect or Microsoft Word or similar) would facilitate production. Any electronic text provided should have a minimum of formatting incorporated to facilitate conversion to the journal format.

References in the text should be numbered consecutively as they are cited and annotation of the references should accord with the style given in *Index Medicus*. Where there are four or more authors, list only the first three then *et al*.



HYPERBARIC TECHNICIANS & NURSES ASSOCIATION THIRD ANNUAL SCIENTIFIC MEETING

Conference: 3rd Annual Scientific Meeting on
Diving and Hyperbaric Medicine

Date: 22nd to 23rd September, 1995

Venue: Carlton Radisson Hotel
Melbourne, Victoria, Australia

This is an international scientific conference which is being hosted by the Australian Hyperbaric Technicians & Nurses Association. The Association was formed in 1990 and despite being a newcomer on the hyperbaric scene has a membership of 145. The conference will cover hyperbaric medicine on the Friday and diving related issues on the Saturday. Keynote speakers will be Dr. Richard Moon and Dr. Cuauhtemoc Sanchez. Dr. Moon, from the Duke University Research Facility, is the current President of the Undersea Hyperbaric Medicine Society and has published extensively on diving and carbon monoxide gas poisoning. Dr. Sanchez is the Director of National Hyperbaric Services in Mexico.

Conference Arrangements:
Kevin Fabris or John Houston Telephone: (03) 276 2323 Facsimile: (03) 276 3780

President's Message

At a Teleconference of the Australian Military Medicine Association Council held on 18 May, the founding President, Wing Commander James Ross RAAF, tendered his resignation, effective immediately, from that Office. James' decision to resign as President was prompted by his impending departure to the United States on a two year exchange posting.

The position of President will be filled, *ex officio*, by the Vice President, Dr Nader Abou-Seif, until the Annual general Meeting of the AMMA on 2 September 1995.

In late 1991, I received a phone call from James Ross discussing plans for an association to serve those people with an interest in all disciplines of military medicine. We agreed that such an organisation had a place to bring together all those both within the ADF and wider medical and paramedical communities. I was obviously not alone, as from an initial embryonic council, AMMA now stands as a group of over 300 members.

The growing role and strength of AMMA are a tribute to the driving force of James who, as inaugural President, can look back on a job well done. That his vision of 1991 now stands as a healthy organisation owes much to his efforts.

As we look forward to the remainder of 1995 and beyond, we have a responsibility to continue to grow and develop to meet the needs of our membership. Already this year we have seen the announcement of the first AMMA Research Grant, which is dealt with elsewhere in this issue. Council hopes that this may be the first of many ways to encourage and assist the development of military medical knowledge in this country.

Just as our membership base is quite broad, covering as it does a number of disciplines, so too are the ways that we may gain from each other. As with many things in life, the more effort we all put into AMMA, the more we can gain from our membership. I strongly encourage you to contribute to local

AMMA activities, to the journal and to the development of all facets of the organisation. It is your contributions that will ensure our continued growth. Remember, if you are interested in an area of military medicine, it is likely that you will find other like minded members who can share knowledge and experiences to the benefit of others. As our conferences to date have shown, the opportunity for gaining from our colleagues cannot be underestimated. The development of strong regional groups can be a basis for more active exchange of information and fellowship, while providing a strong base for the association as a whole.

As you can see from this issue of our journal, both the quality and quantity of contributions reflect well on our membership, and I ask you to think of using *Australian Military Medicine* as a forum for your contributions whether they are scientific as such, or discussing issues in military medicine. The Council and in particular our valiant journal Editors welcome your contributions. The only restriction of which I remind you is that we are a scientific organisation not a political one.

I find myself fortunate that I have succeeded James at a time when the organisation is both healthy, relevant and growing. With your support, our successors will be able to do the same, which is just as James hoped four years ago.

Nader Abou-Seif

DISCLAIMER

The views expressed in this journal are those of the authors and do not reflect in any way official Defence Force policy or the views of the Surgeon General, Australian Defence Force or any military authority.

Original Articles

When is it asthma?

M.C.F. Pain, RFD, MD (Syd), FRACP

Introduction

Making a firm diagnosis of bronchial asthma is important. It carries implications for lifestyle adjustment, long term therapy and employment potential. In the assessment of military recruits, divers and firefighters, a suspicion of asthma is often the basis for specialist referral with the expectation that a firm diagnosis will be forthcoming. In most cases this is not a difficult process but there remains a group of subjects in whom uncertainty remains.

This paper attempts to provide a rational approach to the assessment of an individual and a basis for confirming or refuting a provisional diagnosis of asthma.

What is asthma?

Asthma can be considered as the inflammatory modulation of intrinsic bronchial reactivity to a degree which produces symptomatic variable airflow obstruction. While that statement is unlikely to satisfy all as a definition, it sits comfortably with the large and accelerating volume of literature concerning asthma published over that last 30 years.

Thus a subject with asthma will demonstrate symptomatic airway obstruction, on a background of non-specific bronchial hyperreactivity in response to a single trigger or multiple triggers associated with bronchial inflammation. The inflammation may be atopic, infective or irritative in origin. There is some evidence that initially at least, bronchial reactivity and bronchial inflammation are independent variables since subjects with bronchial hyperreactivity may show little evidence of bronchial inflammation. However, once bronchial inflammation is established, it certainly increases reactivity¹.

Bronchial reactivity and airway inflammation may each exist as trivial characteristics associated with minimal airflow obstruction or they may interact to cause gross disability and life threatening respiratory failure. Bronchial reactivity can be fairly accurately assessed but bronchial inflammation assessment is more elusive.

Bronchial reactivity

Bronchial reactivity refers to the ability of the bronchial smooth muscle to alter its tone to produce bronchoconstriction and is thought to be a fundamental component of an asthmatic reaction. Bronchial reactivity can be demonstrated and partially qualified using inhaled smooth muscle

constrictors such as histamine and methacholine, hypertonic aerosol inhalation or exertion. It is a normal property of the bronchial tree and probably demonstrates a continuous distribution in the general population^{2,3}. Most studies of reactivity show an overlap between subjects with asthma, subjects with upper respiratory atopy and completely asymptomatic normals. Asymptomatic normal subjects may demonstrate reactivity to a degree shown by some symptomatic subjects with asthma so that the demonstration of abnormal bronchial reactivity is not sufficient evidence upon which to diagnose asthma. Factors which may enhance intrinsic reactivity in foetal or neonatal environments are currently the subject of much interest⁴.

Bronchial inflammation

The pathways of the inflammatory cascade are complex and still unravelled⁵. Whatever the specific sequence, the end result seems to produce an acute humeral effect on the bronchial muscle with possible but not inevitable structural changes in the airway wall in the long term^{6,7}. While studies on bronchoalveolar lavage fluid and bronchial biopsy specimens are clarifying these aspects, there is now no simple clinical test for the presence or absence of bronchial inflammation.

Clinical Assessment

History. Recalling childhood episodes of recurrent bronchitis or "chest weakness" strongly suggests an asthmatic background but memory for childhood illness is very unreliable. A family history of atopy is not helpful nor is the presence of allergic rhinitis although it would make the presence of increased bronchial reactivity more likely. A history of episodic breathlessness which is relieved by beta agonists is the historical hallmark of bronchial asthma.

Examination. Unless the diagnosis is obvious and impairment more than minimal, physical examination of the lungs, and chest radiography, are usually completely normal. Subnormal peak expiratory flow or impaired ventilatory capacity with spirometry should improve with inhaled bronchodilator.

Bronchial Reactivity Assessment. This is often requested or suggested as a diagnostic test for asthma. In its performance there are unresolved problems

relating to procedure standardisation and dose delivery^{8,9}. Methacholine and histamine are most commonly used in provocation studies and simple laboratory protocols have been published¹⁰. There is probably little basis for a preference. Non-isotonic aerosols and exercise can also be used to demonstrate hyperreactivity and are probably less selective than the pharmacological agents.

Since there is not a sharp cut-off between "normal" and "abnormal" reactivity the interpretation of a bronchial provocation test is not always clear cut. A lack of reactivity to testing makes the diagnosis of asthma very unlikely (probably less than 5% error). The presence of hyperreactivity does not automatically equate with asthma, although the brisker the response to challenge the more likely this becomes. Nor is there a close relationship between asthma severity and the degree of reactivity^{11,12}.

Making a decision

The final decision will always be one of probability. Recruitment into a service with acknowledged stresses and hazards requires a medical screening system biased against the potential recruit. The following criteria are suggested in making such a decision.

Asthma

- The presence of respiratory symptoms (usually breathlessness and/or cough), objective airflow obstruction, bronchial hyperreactivity and a therapeutic benefit from bronchodilator therapy.
- Atypical history, normal spirometry, bronchial hyperreactivity and symptomatic improvement with bronchodilators.

Not asthma

- Airflow obstruction, normal bronchial reactivity. Some other lung pathology is implied which may generate other concerns.

- Asymptomatic, normal spirometry and increased reactivity with no bronchodilator use. While it could be argued that this group represents childhood asthma in remission and therefore has a risk of relapse, the fact that asymptomatic adults of all ages can show increased bronchial reactivity indicates that the development of asthma is not automatic.
- Past history of atopy or childhood asthma, now asymptomatic with normal bronchial reactivity.

This approach puts an emphasis on the difference between asthma and increased bronchial reactivity. A case could be made for considering all individuals with increased intrinsic bronchial hyperreactivity as having subclinical asthma¹³. They probably should be excluded from entering occupations in which there is a known asthmogenic exposure although this is controversial.

Conclusion

It is fortunate that, in most situations, the diagnosis of asthma can be firmly made on the basis of history, physical examination and simple lung function tests. In doubtful cases the demonstration of normal bronchial reactivity makes asthma most unlikely but the finding of increased reactivity still requires interpretative caution.

ABOUT THE AUTHOR

Michael Pain is the Director of Thoracic Medicine at the Royal Melbourne Hospital and is a member of the RAAFSR. He is Consultant Physician to the Director General of Air Force Health Services and to the Surgeon General of the Australian Defence Force.

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A study on glove use at a small rural hospital

Pamela Carver, RN, BHLth Sc, Infection Control Cert.

Abstract

This study was conducted to determine the use of gloves one year after an initial Quality Improvement survey. Glove use at the time was inappropriate on occasions and several types of gloves were used, some incorrectly. Availability of gloves was also poor. Education was given on glove use and they were made more available through the hospital. This study shows that glove use has improved and that education is needed in two identified areas.

Introduction

Gloves have been used for many years. Initially they were introduced to protect the patient from the bacteria on a surgeon's hands. As knowledge of bacteria grew, and the principals of cross infection were realised, the use of gloves is now to protect both patient and health care worker from all forms of body fluids. The use of gloves is an important part of barrier protection as specified in Universal Body Substance Precautions.

The two types of gloves available for clinical use are vinyl and latex gloves. Latex gloves also come in sterile and nonsterile forms. The ideal glove for protection would have the following characteristics. It should be free of powder, be comfortable to wear, and have bacterial and viral resistance factors incorporated in the material. In a report on latex gloves by Ansell¹, they state that latex gloves afford nine times the barrier protection of vinyl. Latex gloves are also shown to be less resistant to penetration by pathogens than vinyl gloves².

Expenditure on gloves represents a significant item in a hospital's budget. Disposal of gloves also creates problems for the environment. Health care workers should restrict the use of gloves to appropriate situations and use the appropriate glove while not compromising on safety for themselves or others³.

Method

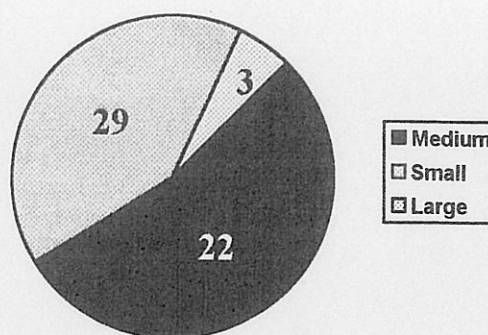
The first audit carried out in the hospital showed that both latex and vinyl gloves were found in clinical areas. As a result of the research findings mentioned above, the vinyl gloves were removed from the clinical areas. The kitchen staff elected to continue with vinyl as they felt they were more comfortable to wear.

In January 1994 holders for gloves were identified as a need in most areas so as to make gloves more readily available in bathroom and treatment areas. Ansell Medical have a glove box holder called "Dracula" which can be wall mounted. These have been used effectively at this hospital allowing gloves to be available in the rooms most likely to have body substance contamination without taking up valuable bench space.

By July 1994 all areas were well supplied with gloves including a box attached to the wall beside the ambulance entrance to allow immediate donning of gloves when blood is known to be present on the patient.

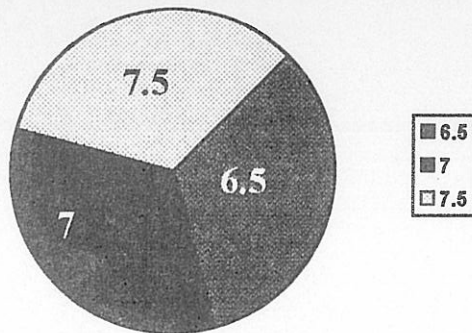
Usage rates for gloves are reflected in the stores orders for the year. Figures 1, 2 and 3 give the number of boxes of gloves used for 1994.

Figure 1. Vinyl Gloves: Number of boxes ordered by size, 1994.



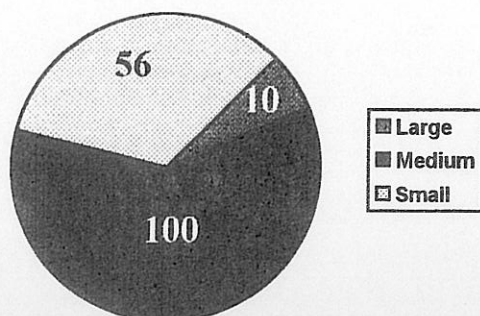
Sterile latex gloves are used mainly in the Emergency Department for minor operations. Since urinary catheterisation is rarely done, sterile gloves have not been used in the ward area for some time. Figure 2 shows the number of boxes of gloves used in the Emergency Department.

Figure 2. Sterile Gloves: number of boxes ordered by size, 1994 (Emergency Department).



Unsterile latex glove usage has risen in 1994 and is related to education and availability of gloves. Latex gloves are used by both clinical staff and hotel services staff as a barrier against body substances. Figure 3 shows the number of boxes of gloves ordered from stores.

Figure 3. Unsterile latex gloves: number of gloves ordered by size, 1994.



Gloves are used primarily by the nursing staff and hotel staff who handle patients and linen. A survey was done on glove use by these staff members of the hospital. Table 1 shows the questions used on the form.

Table 1. Questions used on the glove use survey form

1. What type of gloves do you wear during working hours?
2. For whom can you see the risk being reduced by wearing gloves? <ul style="list-style-type: none"> • Yourself • Patients you are attending • Other patients • Colleagues • Family • The public Others (specify)..... (Circle the answer)
3. For what reasons do you wear gloves?
4. How long do you wear gloves for?
5. When do you wash your hands associated with glove use?
6. Are gloves readily available in your work area?

All forms from the nursing staff were returned while only half of the hotel service staff returned forms.

Findings from the survey are as follows:-

Question 1

Latex gloves were identified by all staff except one who used vinyl gloves (a kitchen staff member). Six staff members also use flock lined rubber gloves for use with chemicals.

Question 2

Nineteen staff members circle all the answers. Three identified "yourself" and "the patient you are attending". One stated "yourself" and one stated "yourself, colleagues and family".

Question 3

Reasons given for wearing gloves included the following:

Universal Body Substance Precautions (10); Prevent cross infection (12); Aseptic technique (2); Protection (10); For blood taking (1); Cleaning beds (2); Save your hands (1).

Question 4

Answers on the time factor gave the following:

As long as attending patient (4); As long as the job or procedure lasts (8); no more than 30 minutes (3); as long as necessary (5); for a specific job (1); four hours per day (1); when handling the linen (1).

Question 5

For washing hands all answered before and after glove use.

Question 6

Gloves were readily available in all areas according to all respondents.

Discussion

The survey has identified at least two areas of education. The primary reasons for wearing gloves for infection control purposes are to protect yourself during contact with body substances and to prevent cross infection when dealing with patients whose immune integrity is compromised. The second area identified is in the time gloves are worn. Ideally gloves should be worn for no longer than one hour, as after 30 minutes bacteria start to multiply in the warm moist environment provided by the latex and vinyl gloves.

Improper use of gloves may increase the risk of transmission of infection between patients⁴. There is a need for glove use to be task specific so that the chance of improper glove use is reduced. The use of gloves may create a false sense of confidence in health care workers. Gloves are not an adequate measure alone to protect against nosocomial infection or for self protection. Intact skin remains the most effective barrier.

Conclusion

Glove use at this hospital as identified by this survey would appear to be satisfactory. Staffing does not allow personnel to be visualised and questioned on glove use as a formal procedure, which might elicit more details on usage practices. Glove use has increased as a result of education on Universal Body Substance Precautions and Workplace Health and Safety.

A followup survey in one year will give further statistics on glove use now that latex gloves only are used in the clinical areas. The survey will also show if changes occur in the areas identified needing inservice education, which will be carried out over the year.

ABOUT THE AUTHOR

Pamela Carver has been a member of the Naval Reserves since 1988, with various postings to establishments on the East coast over that time. Her nursing experience of 17 years includes work in remote areas, Gerontology, Palliative Care, Clinical Education work with students from universities, and rural hospitals. Current interests include Infection Control, Stress Management and Primary Nursing as applied to the rural area.

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An Australian naval psychiatric practice

Duncan Wallace MBBS, FRANZCP

Abstract

A retrospective account of two years practice as a consultant psychiatrist to the Royal Australian Navy is described. A total of 78 patients were seen, the majority of whom were male junior sailors. Alcohol abuse and dependence, and adjustment disorders were the most commonly encountered problems. The role of a psychiatrist working with the military is discussed.

Introduction

The Naval environment possesses numerous features making it distinct from civilian life, and often dangerous. Life in a warship is often likened to living in a factory, with attendant risks of exposure to electrical, chemical, and noise hazards. At sea, there are dangers in scaling ladders, working aloft and even the risk of falling overboard. Naval aviation is also an extremely dangerous business. Imagine the hazards involved in recovering a 15 metre long helicopter at night onto the small, pitching flight deck of a frigate!

As well as being dangerous, life at sea can be unpleasant and uncomfortable, with over-crowding, a lack of privacy, and work spaces that are often dirty and noisy, not to mention the possibility of motion sickness. Separation from spouse, families, and friends may lead to feelings of loneliness and isolation, especially in young adults and adolescents living away from home for the first time. Extended periods at sea, or posting to remote locations can also contribute to boredom and unhappiness.

Aim

The aim of this study was to describe the type of patients seen by a consultant psychiatrist to the Royal Australian Navy, together with a brief description of their management and discussion of some associated issues. A review of clinical outcomes was considered outside the scope of this brief article.

Method

This was a retrospective review. Patients seen were all serving members, as medical care is not provided for families by any branch of the Australian Defence Force. Whilst the RAN maintained a significant commitment in the Persian Gulf during the period of the study, August 1990-August 1992, fortunately no combat casualties occurred. Diagnoses are described according to the Diagnostic and Statistical Manual of Mental Disorders III - Revised¹, and were made by the author at the time of clinical interview. Out-patients were seen both in private rooms and on a sessional, fortnightly basis at HMAS Kuttubul, Sydney. In-patients were seen at Balmoral Naval Hospital.

In Sydney, two other psychiatrists also see patients. Appointments are made with the psychiatrist who has the first available time. Patients were referred by naval and civilian contracted medical officers. In principle, a ship's commanding officer can initiate referral to a psychiatrist, but in practice this occurs concurrently with medical consultation.

Results

A total of 78 patients were seen, 73 out-patients (94%) and 5 in-patients (6%). There were 65 males (83%) and 13 females (17%). Sex distribution in the 14,843 personnel of the RAN at the time of the study was 88% male and 12% female. By rank, there were 6 officers (8%), 10 senior sailors (13%) and 62 junior sailors (79%) seen. In the general naval population, 19.5% were of commissioned rank and 80.5% were sailors. Mean age for both male and female patients was 26 years, and by rank was 31 years for officers, 39 years for senior sailors and 24 years for junior sailors. Seven of these patients were Army personnel and were seen by a Navy consultant as they were posted near Naval facilities. They are included by equivalent naval rank.

The most common diagnoses are shown in Table 1.

Table 1 - Common diagnoses

Diagnoses	Number	Percentage
Alcohol Abuse/Dependence	22	28%
Adjustment Disorder	22	28%
Anxiety Disorders	16	21%
Affective Disorders	12	15%
Personality Disorder	5	6%
Schizophreniform Psychosis	2	3%
Eating Disorders	2	3%
No Psychiatric Diagnosis	8	10%
TOTAL	89	100%

Alcohol abuse or dependence and adjustment disorders were the most commonly encountered problems. Cases of alcohol abuse were often associated with a second diagnosis. These were: Adjustment Disorders (7), Personality Disorders (2), Panic Disorder without Agoraphobia (1), Post Traumatic Stress Disorder (1), Major Depression (1), Somnambulism (1) and in three out of six of the parasuicides.

Adjustment Disorders included those with anxious mood (4), depressed mood (14), mixed disturbance of emotions and conduct (1), and "not otherwise specified" (2). Precipitating stressors included: personality conflict in the work place; desire to leave the Navy; relationship difficulties, including marital breakdown and one case of a spouse with mental illness; sexual dysfunction; financial difficulties; incarceration; separation from spouse, and illness of a child.

Anxiety disorders included Post-traumatic Stress Disorder (7 patients), Panic Disorders without Agoraphobia (5), Claustrophobia (4) and Panic Disorder with Agoraphobia (1). Persons suffering from Post Traumatic Stress Disorder had experienced events such as: witnessing a drowning when shipmates were washed overboard; being overcome by toxic gas in a mass gassing incident with multiple fatalities; and receiving an abdominal stab wound when attached and robbed by a gang whilst on shore leave.

Patients with claustrophobia included: a sailor who feared being trapped in the junior sailors' accommodation space in the event of his ship capsizing, following a severe storm; fear of service in submarines; and another experiencing intense anxiety symptoms, made worse by sea-sickness, in small, unventilated ship's compartments.

Affective disorders included: Major Depression (7; 9%), Major Depression with Melancholia (3; 4%), and Dysthymic Disorder (2; 3%). Three of those meeting criteria for Major Depression had concurrent diagnoses of Post Traumatic Stress Disorder. Psychotic illness was uncommon, with only two patients (3% found to be suffering from Schizophreniform Disorder.

Other diagnoses included: Somnambulism (3; 4%), Attention Deficit Disorder with Hyperactivity (ADHD) (1; 1%), Impotence (1; 1%), Motion Sickness (1; 1%) and Somatization Disorder (1; 1%).

Members who were diagnosed as having personality disorders were referred because of: poor work performance; recurrent disciplinary problems; inability to accept direction or criticism; substance abuse; or inability to work effectively with others. Diagnoses included Antisocial Type (1), Avoidant (2), and Not Otherwise Specified (1).

All of the six parasuicides in the series were non-life threatening, and consisted of either minor self-mutilation or sedative over-dose, whilst intoxicated with alcohol. Two were considered to have a personality disorder, three had adjustment disorders, and one was alcohol dependent.

Patients who were not given a psychiatric diagnosis included: a conscientious objector; a sailor not wanting to be posted to a particular ship because of anticipated difficulties in his area of work, combined with marital problems and interpersonal difficulties with superiors; a male homosexual sailor requesting discharge after being threatened with "outing"; and several cases of disenchantment with Navy life where the member earnestly desired an immediate discharge, this latter predicament being colloquially known as "Navyitis".

Case of so called "Navyitis" arose for diverse reasons. Some examples included: frustration at separation from home and family; problems in technical training, i.e. not being in the field they wanted, or it was not what they expected it to be, or it was too difficult; financial debts leading to the desire for a better paid job; discord with superiors; change in life circumstances; or a general dislike of the military system.

Management

The RAN has a comprehensive policy for the management of alcohol and drug problems. Assessment and management of alcohol related problems is performed by Alcohol and Drug Programme Advisers (ADPA), Command Alcohol and Drug Programme Coordinators (CADPC), or medical and nursing staff. Treatment includes referral to service counselling staff; attendance at a Substance Abuse Prevention group (i.e. an out-patient group utilising the service counsellors); regular attendance at self-help groups, especially Alcoholics Anonymous, with periodic review by the ADPA; admission to an in-patient detoxification and rehabilitation unit; or referral to a consultant psychiatrist.

I worked in frequent contact with these services, accepting referrals to assess patients for the presence of concurrent psychiatric illness, providing clinical supervision for staff and sometimes making referrals to their services for assistance in the management of patients with alcohol abuse or dependence.

Management of Adjustment disorders consisted of short term psychotherapy, and by definition, resolved promptly and completely. Psychotherapy, both directive and insight-oriented, was employed for patients with clinical depression, as well as anti-depressants where biological symptoms were evident. I treated Anxiety disorders with

behaviour therapy, and was grateful for the assistance of Naval psychologists in these programmes.

Somnambulism rarely comes to attention in civilian practice. But concern about the risk of self harm, in particular drowning, makes it a significant disorder within the Naval environment. The patients I saw did not resemble typical cases as described in the literature^{2,3} in that they were not associated with severe psychopathology or drug use. Two out of the three patients admitted to a history of childhood somnambulism, and all had recent significant personal stressors. Somnambulism invariably makes the member unfit for further service in the RAN, and thus those seen with this disorder were quite distressed at the sudden termination of their chosen career. Brief supportive psychotherapy was sometimes employed to help cope with the necessary adjustment.

Patients with so called "Navyitis", and some of those with personality disorders, included people whose behaviour or attitude in the work-place had led their superiors to the conclusion that they needed to see a psychiatrist. In such cases, their superiors may have been searching for a means to discharge them. As a service psychiatrist, there is a temptation to be influenced by the bureaucratic needs of the system and provide a solution by giving a psychiatric diagnosis. But when no psychiatric disorder was found, this was always specified, and the sailor's future was referred for administrative decision. In such cases, the psychiatrist may also act as a mediator to ameliorate predicaments that are often complex. Often, a recommendation for discharge from the service was in fact the best solution for all concerned.

In cases where no psychiatric disorder was found, this opinion was invariably shared by the referring ship's medical officer, who was usually of junior officer rank. They often valued a consultant's support in convincing more senior, executive branch officers that the member concerned was not "crazy".

Discussion

Interpretation of this data is limited by the methodology employed i.e., a small sample, retrospective file review, with diagnoses made on clinical interview, rather than a structured diagnostic interview. Also, the author did not see all patients requiring psychiatric consultation in the area, and thus there may have been some undisclosed bias in referral patterns by primary care physicians.

Comparison of my local data with contemporary overseas experience is difficult for a number of reasons. Firstly, the methodological limitations described. Also, the nature and much larger size of foreign navies means the subject matter of their psychiatric studies frequently has little in common with local experience, e.g., issues pertaining to the care of spouses and children^{4,5,6}; nuclear submarine crew problems⁷; or conditions of service

and administrative procedures unique to a particular service⁸. Cultural difference may also limit direct comparisons of drug and alcohol problems^{9,10,11}.

Pullen and Labbate's US study¹² seemed to avoid many of the difficulties mentioned above, enabling reasonably direct comparison with their results, resembling the experience described in this study. At a US military hospital, they performed a retrospective survey of psychiatric admissions over a three month period using DS-III-R diagnosis made by clinical interview. They included only currently serving members, but excluded all alcohol and substance abuse related problems. Thirty-six of 101 patients were from the navy. There were 85 males and 16 females. Most patients were in lower enlisted ranks. They also found the most common diagnosis was Adjustment Disorder (68). Other diagnoses included Major Depression (10), Psychotic disorders (7), miscellaneous (10) and no diagnosis (6). Forty-one received a diagnosis of personality disorder and 12 suicide attempts were described.

Contemporary Australian civilian practice was described by Andrews and Hadzi-Pavlovic¹³ in their national survey of psychiatrists. Respondents stated that 18% of patients seen had major or endogenous depression or bipolar disorder; 11% had a type of schizophrenia; 14% dysthymic disorder; 17% an anxiety or phobic neurosis; 8% post traumatic stress disorder, adjustment disorder or other neurosis; 13% were seen for personality disorder; 2.5% had drug and alcohol problems; and 6% had marital problems or other life problems that did not warrant a DSM-III diagnosis. The median age of those seen was 36 years, 61% were female and 12% were either under 16 or over 65 years of age.

Patients seen in my study were less likely to have a severe mental disorder or personality disorder, and much more likely to have an alcohol problem or adjustment disorder, compared to those seen in civilian practice. Officers seem somewhat under-represented amongst the patients seen. Women did not seem particularly over-represented, compared to their marked over predominance in the civilian study. But of course, without the benefit of tests of statistical significance, these are only gross observations.

Screening of recruits and lengthy training periods allowing further re-assessment of suitability for service life, may explain the fewer cases of serious mental disorders and women with mental disorders seen in the study. This then begs the question, "Why is anyone with a psychiatric problem allowed in the Navy in the first place?" Clinical psychologists are employed by the RAN to screen potential recruits for suitability. They use the Otis Self-Administering Test of Mental Ability, Higher Examination - Form C, and the Australian Army Self Descriptive Inventory to test applicants, followed by a clinical interview. But

identification of those temperamentally unsuited for the military is a notoriously difficult task.

McCraw¹⁴ asserts that the desire to eliminate all those with a low likelihood of adapting to military life must be balanced against the risk of inappropriately eliminating large numbers of qualified applicants. To do so these days may even invite claims of discrimination. Moreover, screening tests and interviews essentially rely on the truthfulness of the applicants. In my experience, some patients had failed to disclose, or even actively concealed, problems which would have led to the rejection of their application to enlist. Invariably, the motivation for such a deception was their enthusiasm to be accepted into the Navy.

Being faced with situations like these highlights the ethical dilemma between the psychiatrist's obligation to act in the interests of the individual, versus the need to preserve the integrity and efficiency of the fighting force as a whole. This problem was described by several American authors during the Vietnam War^{15,16,17}. Their debate about the military psychiatrist as a "captive professional"¹⁷, was also probably coloured by the political controversy about the war, the ambivalent attitudes of

psychiatrists bonded to the military to pay back university tuition fees, and the fact that many were frustrated about being trained as psychoanalysts, then being ordered to practice as social psychiatrists. Despite these differences, their words of caution remain valid today, and were recalled¹⁸ in the aftermath of the Gulf War.

ABOUT THE AUTHOR

Duncan Wallace is a Staff Specialist in Psychiatry at St Vincent's Hospital Sydney.

"My previous service as a general duties medical officer in the RAN, together with continued active membership of the Reserve, interested me to become a consultant psychiatrist to the Navy, upon completion of specialist training. This experience also provided invaluable preparation for the role of service psychiatrist through learning service jargon and slang, gaining insights into the military bureaucracy and having first hand experience of service conditions."

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Review Articles

Phosgene - A Research Review

Maria Szilagyi and Raymond M. Dawson

Abstract

Phosgene is a toxic substance which causes fatal permeability-type (non-cardiogenic) pulmonary oedema on inhalation. Phosgene is a simple low-molecular weight synthetic chemical which was used as a chemical warfare agent in World War I. Phosgene attacks the epithelial lining of the respiratory tract. This paper summarises the current state of knowledge about the actions of phosgene and treatment of its effects, as found in a recent review and recent research papers.

Introduction

Phosgene (COCl_2 ; MW = 98.9) is a highly reactive gas that was used extensively as a chemical warfare agent in World War I. It is still considered to be a threat agent, although the probability of its use is low¹. It has a boiling point of 8°C and a high density as a liquid and gas, which makes it useful as a chemical warfare agent, as it will remain at ground level for prolonged periods. Phosgene is a hazard industrially: not only is it an important intermediate in the manufacture of agricultural and pharmaceutical products, but it is formed on combustion of foamed plastics, e.g. polyvinyl chloride (PVC)¹.

Mathur and Krishna (1992)¹ have published a comprehensive but concise review of phosgene covering its history, physical and chemical characteristics, metabolic formation, effect of phosgene exposure, course after poisoning, mechanisms of lung damage and therapy of phosgene poisoning. A brief summary of the important points follows; the review should be consulted for further details.

Phosgene causes non-cardiogenic pulmonary oedema in humans, and increases lipid peroxidation and vascular permeability. Inhalation of phosgene produces initial symptoms of irritation of eyes and upper respiratory passages, and these are followed by a symptom-free clinical latent period. As pulmonary oedema develops, the symptoms return with coughing, shortness of breath, tightness of chest and other symptoms, and death occurs within 48 hours in fatal cases, although patients may die later of infections consequent upon phosgene exposure. The pulmonary oedema regresses in survivors within a few days, but complete recovery may take up to several years. The lavage fluid from the lungs has a high protein content and increased total cell count, and other biochemical changes are in serum lactic

acid dehydrogenase, lung glucose-phosphate dehydrogenase and non protein sulphydryl content (all increased). ATP and Na-K-ATPase (both decreased), and acyl (palmitoyl) transferase, which increases after an initial decrease. This last-mentioned enzyme is involved in the synthesis of surfactant; an intact surfactant system is essential for the maintenance of integrity of alveolar membrane and prevention of the development of pulmonary oedema. Na-K-ATPase is a membrane-bound enzyme which has a key role in the active transport processes that regulate homeostasis and fluid balance.

The toxic effects of phosgene are not due to its hydrolysis and conversion to HCl in the aqueous medium of the exposed mucous membranes of the respiratory tract. Lipoxigenase intermediates, derived from arachidonic acid, may be involved in phosgene-induced lung damage, presumably by increasing systemic vascular permeability. Accordingly, specific leukotriene-receptor blockers or inhibitors of leukotriene synthesis have been found to counter development of oedema. The lung damage can also be blocked by various agents which increase cellular cyclic adenosine monophosphate. Other means of countering phosgene toxicity include glucocorticoids, positive pressure oxygen ventilation, sodium bicarbonate to correct metabolic acidosis, diuretics, antibiotics to counter subsequent infection, and physical rest. However despite all these measures, Mathur and Krishna (1992)¹ claim that no antidote for phosgene is known, although hexamethylene tetramine is an effective prophylactic agent in rabbits.

Additional information on phosgene from other sources is discussed below.

Toxicity

Table 1 lists the LCt_{50} of phosgene by inhalation in various species. The LCt_{50} is the dose of toxicant that is lethal to 50% of the exposed population. Concentrations below 5 ppm did not cause alveolar oedema in rats, regardless of the length of exposure. However, there was no threshold concentration of phosgene (down to 0.1 ppm) for an increase in pulmonary lavage protein content or widening of pulmonary interstices. At low concentrations (0.1-2.5 ppm) pulmonary damage in the rat was primarily located at the transition for terminal bronchioles to the alveolar ducts, whereas at higher concentration (5 ppm) damage to the alveolar pneumocytes (Type 1) was more conspicuous². These results are consistent

with the review by Cucinell (1974)³ which reported that prolonged exposure of animals to 0.2-1 ppm phosgene caused lung lesions. Phosgene is excreted via the lungs and kidneys³.

At very high doses (200 ppm), phosgene passes through the blood-air barrier, reaches the lung capillaries and reacts with blood constituents.

Haemolysis in the pulmonary capillaries occurs with haematin formation, congestion by erythrocyte fragments, and stoppage of capillary circulation. Death follows within a few minutes from "*acute cor pulmonale*" (acute overdistension of the right heart), often before pulmonary oedema can develop⁴.

Table 1. *LCt₅₀ of phosgene to inhalation for various species.*

SPECIES	LCt ₅₀	REFERENCE
Mouse	3400 mg.min.m ⁻³	Cucinell, 1974 ³
Rat	1500-2400 ppm.min	Clayton, 1977 ⁵
	1400-6500 mg.min.m ⁻³	Cucinell, 1974 ³
Guinea Pig	2200-2800 mg.min.m ⁻³	Cucinell, 1974 ³
Dog	4200-8400 mg.min.m ⁻³	Cucinell, 1974 ³
Sheep	13300 mg.min.m ⁻³	Keeler <i>et al.</i> , 1989 ⁶
Monkey	1000 mg.min.m ⁻³	Cucinell, 1974 ³
Human	500-1600 ppm.min	Mathur and Krishna, 1992 ¹
	3200 mg.min.m ⁻³	Cucinell, 1974 ³

Guinea pigs and cats can develop tolerance to phosgene after exposure to low doses over 7-40 days. In particular, tolerant cats were able to survive a low-dose/long-exposure Ct that was 4.5 times the high-dose/short exposure LCt₅₀. On the other hand, rats exposed to 1 ppm phosgene for only 6 hours did not develop increased resistance to phosgene, although

they were capable of surviving normally lethal doses of ozone and nitrogen dioxide³.

Clinical Manifestation

The clinical manifestations of phosgene exposure in humans are summarised in Table 2¹.

Table 2. *Clinical manifestations of phosgene exposure in humans*

Exposure	Observations
> 0.4 ppm	Perception of odour
> 1.5 ppm	Recognition of odour
> 3 ppm	Irritation in eyes, nose, throat and bronchi
> 3 ppm.min	Beginning of lung damage
> 150 ppm	Clinical pulmonary oedema
~ 300 ppm.min	LCt ₁
~ 500 ppm.min	LCt ₅₀
~ 1300 ppm.min	LCt ₁₀₀

LCt₁, LCt₅₀, and LCt₁₀₀ are the concentrations required to kill 1%, 50% and 100% of the population respectively.

Mechanism of Action

The involvement of enzymes and mediators in the action of phosgene has been investigated in several studies. Hurt *et al* (1992)⁷ produced results consistent with toxic oxygen species being a partial or major source of lung injury, while not discounting other mechanisms or excluding other effects with drugs

having more than one mode of action. Frosolono and Pawlowski (1977)⁸ fractionated lungs into nuclear debris, mitochondrial-lysosomal, microsomal and soluble (cytoplasmic) fractions 0, 30 and 40 min after exposure of rats to phosgene concentrations within the LCt₅₀ range. They found that activities of the enzymes *p*-nitrophenylphosphatase, cytochrome C

oxidase and ATPase decreased, with serum lactate dehydrogenase increased in response to phosgene. Madren-Whalley and Werrlein (1993)⁹ studied the effect of phosgene directly on contiguous sheets of sheep pulmonary artery endothelial cells *in vitro* that mimicked *in vivo* organisation of endothelial tissues. They concluded that phosgene increased permeability in a dose-dependant fashion, with an immediate onset inconsistent with the clinical latent phase of phosgene poisoning. Results of other experiments with this preparation suggested that specific cell responses to phosgene may be linked by F-actin lesions to altered expression of antigenic markers, immunosuppression and response to drug therapy^{9,10,11}.

The use of glucocorticoids (corticosteroids) in an attempt to counteract phosgene toxicity was mentioned above, in the context of the review by Mathur and Krishna (1992)¹. Such steroids have been investigated in a variety of models of pulmonary oedema, and in treatment of human acute lung injury of widely different aetiologies, partly because of the ability of the corticosteroids to block increases in microvascular permeability¹². The effect of the steroids have been reported to be beneficial, without effect, and even harmful¹³. These conflicting results may be due to the corticosteroid preparation, the dose, time and duration of its administration, the agent producing the lung injury, the extent of lung injury, the animal species under study, the parameter under investigation (a biochemical or physiological change, or survival) and the design of the experiments^{12,13,14}. The most important of these factors is possibly the timing of steroid administration. Several studies^{13,14,15} have demonstrated that corticosteroids have most benefit when given early, i.e. before the oedema-causing mechanisms have progressed beyond a certain, though ill-defined, point. There are no data suggesting that corticosteroids can reverse pre-existing lung damage, although they may prevent additional injury. Moreover, corticosteroids may have adverse effects when given after lung injury,

including, in humans, increased susceptibility to infection and, in animals, increased mortality and lung injury with prolonged administration^{12,13}.

Therapy

Little can be added to the current state of knowledge of therapy of phosgene poisoning as outlined by Mathur and Krishna (1992)¹. Esters of cysteine have been found to selectively elevate pulmonary cysteine levels and provide prophylactic protection against perfluoroisobutylene, presumably by direct chemical reaction with it¹⁶. However they are less effective against phosgene¹⁷. Anderson *et al.* (1993)¹⁸ suggested that N-acetyl cysteine and methylprednisolone may be useful in the treatment of phosgene exposure. This suggestion was based on the ability of these compounds to inhibit the effect of phosgene on the human monocyte/macrophage U937 cell line *in vitro*.

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Ray Dawson has a PhD in organic chemistry from the University of Western Australia, but has spent most of his 25 years at AMRL working on the biochemical pharmacology of nerve agents and their antidotes. He was attached to the University of Melbourne's Clinical Pharmacology and Therapeutics Unit at the Austin Hospital in 1979, and to the Chemical Defence Establishment, Porton, UK in 1986-7. As a result of the Australian Government's recent review of its policy on defence against biological warfare agents, Dr Dawson has switched fields to the study of pulmonary oedemagens and toxins

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Brucellosis

Sue Sharpe

Aetiology

Brucellosis is caused by organisms of the genus *Brucella*; particularly *B. melitensis*, *B. suis* and *B. abortus*. These organisms are small Gram-negative, aerobic, coccobacilli and are facultative intracellular parasites which grow within monocytes and macrophages¹.

Epidemiology

Brucellosis is primarily a disease of domestic animals, but humans may be infected through ingestion of animal products (fresh milk and milk products), direct contact with infected animals, or inhalation of aerosols of the microorganism¹.

Although the human disease is now uncommon in most developed countries, it remains hyperendemic in the Middle East (Iran, Iraq, Saudi Arabia, Kuwait), in Northern Africa (Algeria, Tunisia, Malta, Egypt, Morocco), some European countries (France, Spain, Greece), South America (Mexico, Peru), and Asia (China, parts of the former USSR)¹.

Brucellae are killed by pasteurisation and simple disinfectants. The organisms are stable at low temperatures and may remain viable for weeks in

infected tissue, water, unpasteurised dairy products, and soil^{2,3}.

Man-to-man transmission has not been documented³.

Pathology

Organisms which have entered the body are engulfed by phagocytes, proliferate within them, and are carried to the regional lymph nodes. Infected lymphocytes may die, releasing bacteria and stimulating the activation of local mononuclear cells. If this immune response is insufficient to control the infection, infected cells may disseminate via the blood stream. They then localise in reticuloendothelial tissue (especially the spleen, liver, bone marrow and lymph nodes) and also in the kidney. The infection induces a granulomatous reaction; caseation and necrosis occasionally result².

Bacteria may remain dormant in tissue and bone marrow, which makes relapse possible, and also reduces the efficiency of antibiotic therapy.

Antigenicity

No exotoxins or antiphagocytic antigens have been detected. Two major surface antigens, A and M occur

in differing amounts in different species. An outer membrane protein, the L antigen, has also been detected⁴.

A 'smooth' (S) form of *Brucella* appears to be associated with virulence, and is more resistant to phagocytic killing than 'rough' strains. *B. abortus* also demonstrates inhibition of neutrophil degranulation which consequently suppresses the anti-bacterial activity of polymorphonuclear leukocytes. The factors which cause this inhibition are of low molecular weight (less than 1000 Da)².

A possible virulence factor which is only produced *in vivo* and enhances intracellular survival has been detected but not characterised².

Clinical Manifestations

The incubation period in humans is one to six weeks, with an average of two weeks^{3, 4}. The disease may last for several days to months or even years⁵. Mortality is low (usually less than 2% in untreated cases, although this figure is higher for *B. melitensis* infections⁵).

Onset may be insidious or abrupt⁵. Common features include loss of appetite and weight loss, backache and headache, malaise, weakness, irregular fever (especially with *B. melitensis* infections,² profuse sweating, arthralgia, chills, indistinct gastrointestinal and nervous symptoms, and depression^{2, 4, 5}. Enlarged lymph nodes, spleen and liver, and localised spondylitis may also be present². Cough occurs in about one quarter of patients, but chest x-rays are usually normal.

Complications are not uncommon and may include vertebral osteomyelitis, osteoarticular involvement, meningoencephalitis, epididymo-orchitis, endocarditis, interstitial nephritis, and (rarely) prepatellar bursitis^{2, 5}. Genitourinary problems occur in about 2-20% of cases.

Relapses are common, especially upon re-exposure to the pathogen.

A BW attack would probably be by aerosol, and would produce primarily pulmonary symptoms. This form of the disease seldom occurs naturally.

Pulmonary Brucellosis

Symptoms associated with pulmonary brucellosis are non-specific. Most cases of pulmonary brucellosis involve fever, cough, mucopurulent sputum, and abnormal signs in the chest⁶. Chest X-rays may reveal pneumonic patches or consolidation, pleural effusion, granuloma of the lung and interstitial pneumonitis. Physical examination may reveal rales, wheezing, and diminished entry of air into the lungs⁶.

Diagnosis

Laboratory Diagnosis

Isolation of the pathogen from blood, bone marrow, or other tissue provides positive identification. However *Brucella* is relatively slow-growing and

fastidious in the laboratory⁷ and this form of identification may be slow. Serology is more useful, and may be done using ELISA on IgG or IgM. Fluorescent antibody analysis is useful for genus identification.

Agglutination tests are frequently performed on sera: titres of above 1:80 are usually indicative of infection (antibodies to *F. tularensis*, *Yersinia enterocolitica*, and *Vibrio cholera* may cross react with the agglutinating antigen and give a false-positive reaction).

More rapid diagnostic systems are being developed.

Differential diagnosis

Brucellosis could be mistaken for tuberculosis, typhoid fever, visceral leishmaniasis, malaria, EBV or cytomegalovirus mononucleosis, infective endocarditis or Q fever⁶.

Treatment

Several different antibiotic regimens have been used to successfully treat human brucellosis. Combinations of antibiotics appear to reduce the possibility of relapse more than treatment with one antibiotic alone^{1, 6, 8, 9, 10, 11, 12}.

The current WHO recommended therapy is a combination of rifampicin and doxycycline¹³, although they also recommend treatment with streptomycin and tetracycline¹⁴. However, both of these regimens are associated with relatively high rates of relapse^{11, 12}.

Recommended Therapy

100 mg of oral doxycycline every 12 hours for 6 weeks, plus 1 g of streptomycin imi for first 2 weeks of treatment¹¹.

- Relapse occurred in only 4% of cases
- 96% of patients became afebrile and asymptomatic within the first week of treatment
- Adverse side-effects were minimal

Or

100 mg of doxycycline bd plus 300 mg of rifampicin bd for 42 days.

- May have a higher relapse rate than the above regimen¹¹.

Other combinations of drugs may also prove to be effective.

Several antibiotics have been shown to be associated with unacceptably high rates of relapse when used alone, despite good *in vitro* results. These include: ceftriaxone, ciprofloxacin, rifampicin, erythromycin, chloramphenicol, and ampicillin^{1, 8, 10, 15, 16}.

Susceptibility of Population

The susceptibility of the general population is high, although most individuals have some degree of resistance or acquired partial immunity³. Susceptibility to *B. melitensis* and *B. suis* appears to be 50-80%³. Traditionally, more males than females have been infected, although this is most likely due to occupational factors. Secondary spread is not considered significant.

Prevention

Although vaccination of livestock is possible, no effective vaccine is available for human use (some individuals in China and the former USSR have been vaccinated with animal vaccines).

Both live attenuated and non-living vaccines have been investigated.

Live vaccines

The most promising live vaccines are those derived from *B. abortus*, because of its lower pathogenicity in humans and cross-reactivity with other *Brucella* species¹⁷.

Trials in China have been performed using strain 104M (isolated in the former USSR - is claimed to be antigenically and immunogenically stable). The vaccine contains $7-10 \times 10^9$ cells and is administered by scarification. Although side effects are minor (headache, weakness, erythema at site of inoculation), severe effects occur if the vaccine is delivered subcutaneously^{17,18}.

Another *B. abortus* strain, 19BA, has been used in the former USSR. Approximately $2-3 \times 10^6$ cells are injected subcutaneously or via scarification and are reported to provide protection for about one year^{17,18}. However, severe reactions often occur, particularly after revaccination¹⁹.

A vaccine derived from *B. melitensis* has been tested on humans, but the margin between an innocuous dose and one producing a febrile illness was considered too small for safe use^{17,20}.

Non-living vaccines

An acetic acid-hydrolysed cell wall preparation of S-type *Brucella* consisting of a protein-polysaccharide derivative has been used in the former USSR^{17,19}. The immunogenicity of this vaccine appears to be enhanced if the patient has previously been exposed to live vaccine²¹. A recommended dose of 1 mg is recommended, with boosters every 11-12 months²². Although the vaccine is claimed to be safe, there appears to be no literature concerning Western trials.

A French vaccine, consisting of phenol extraction of delipidated *B. melitensis* and *B. abortus*, has also been tested. This vaccine is non-toxic, and two doses of 1 mg should be given 15 days apart. However, the efficacy and duration of immunity still needs to be established^{17,23}. Limited trials suggest that

a good immunity is acquired, and that a booster should be given every year.

Passive immune approaches do not appear to be successful in humans, although experiments using animal models are currently being performed.

Potential as Biological Warfare Agent

Advantages as a Biological Warfare Agent

A BW attack would most likely be in aerosol form, which would result in pulmonary brucellosis. This form of the disease is very rare in nature, and may be more severe than the usual forms of brucellosis. The symptoms are non-specific, which would make diagnosis solely by clinical observation difficult.

Although the mortality is generally low, an attack with *Brucella* may result in a high degree of morbidity, and a severe drain on manpower and medical resources, particularly if relapses and complications occur. The long (and variable) incubation period may also lead to a drawn out appearance of the disease.

Antibiotic therapy should be aggressive and prompt, and the right drugs used to minimise the chances of relapse.

Vaccines are currently not available for human use (although they are probably being used in the former Soviet Union).

The organism is relatively stable in the environment and may persist for some time.

Disadvantages as a BW

Although stable in the environment, the pathogen can be killed by simple sterilisation.

Man-to-man transmission is not likely.

Future Directions

More work should be done on human vaccines, and the French vaccine should undergo further testing. Other killed vaccines should also be tested (it would appear that live vaccines produce too many severe side effects to be considered suitable for human use).

Because cell-mediated immunity is the most important in brucellosis (the pathogen is intracellular, so humoral immunity only has a limited effect), better adjuvants need to be developed to enhance the effect of killed vaccines.

Antibiotic therapy should be continued to be studied, as well as better means of delivery. Liposome-encapsulated antibiotics may show some promise.

Passive immune therapies, using monoclonal antibodies are also undergoing testing.

ABOUT THE AUTHOR

Lieutenant Sue Sharpe is a microbiologist and has contributed other review articles to AMM. She is presently working at HMAS Harman, Canberra.

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The value of the "screening" electrocardiograph in asymptomatic aircrew

Stephen Robson, BMedSc MBBS, Surgeon Lieutenant, RANR

Introduction

Military aviation and medicine have been closely allied since the development of flight. The exciting new environment in which the pilot operated proved a fascinating and fruitful ground for medical investigators, with enormous scope for new understanding of the effects of acceleration, unusual spatial orientations and forces on the human body. But the sky would prove to be a dangerous environment in which to work, with enormous potential for misadventure: much of aviation medical research has been directed toward the detection of human frailties with might incapacitate a pilot during flight.

It is vital that a pilot not be at undue risk of incapacitation during flight, and the periodic medical assessments which all pilots undergo are traditionally designed to detect problems which may diminish a pilot's ability to control an aircraft effectively. Particularly in commercial and military operations, where training is time-consuming and expensive, another aim is to identify longer term health problems which may render the pilot prematurely unsuitable for flying.

This brief report presents a case personally managed by the author. In light of the outcome of the case some insight into the causes of sudden inflight incapacitation is offered and the usefulness of a simple "screening" investigation - the resting electrocardiograph (ECG) is discussed.

Case Report

A thirty year old male RAN observer presented for his annual aircrew medical examination, for which a 12-lead resting ECG had been performed 13 days previously. There was delay in the ECG being reviewed by a Medical Officer, and apparent changes of acute ischaemia were noted on the tracing (Figure 1). The officer was immediately admitted to the ward, where a repeat ECG was taken (Figure 2) which showed even more striking changes.

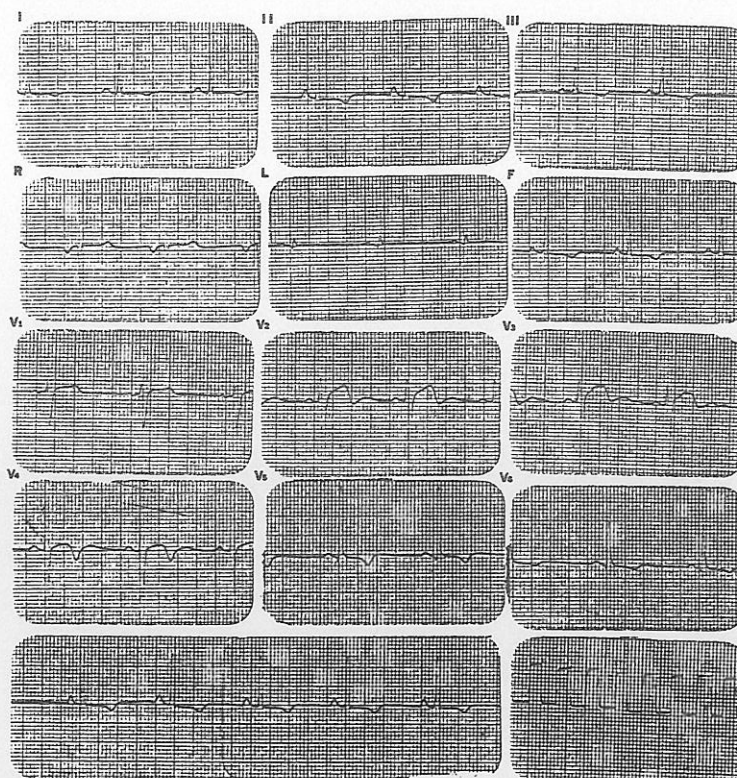
Since his previous examination, the officer had been

totally asymptomatic, adhering to an exercise program which involved riding his bicycle 10 km to and from the Air Station each day, and swimming laps of the local swimming baths each week. He gave no history of chest pain, dyspnoea, palpitations or any other symptoms suggestive of cardiovascular disease. His past medical history was unremarkable, and he had no family history of ischaemic or other cardiovascular disease. His previous ECG tracings had been normal.

On physical examination, the officer was slim, normotensive and appeared quite fit. No physical abnormalities were found.

Urgent examination of cardiac enzymes, serum electrolytes, a full blood examination and serum lipids revealed no abnormality. A chest radiograph was normal. Continuous monitoring of the patient's cardiac rhythm did not show any significant arrhythmias. A consultant physician reviewed the patient and confirmed the findings. He recommended that a stress ECG with Thallium myocardial scan be performed.

Figure 1



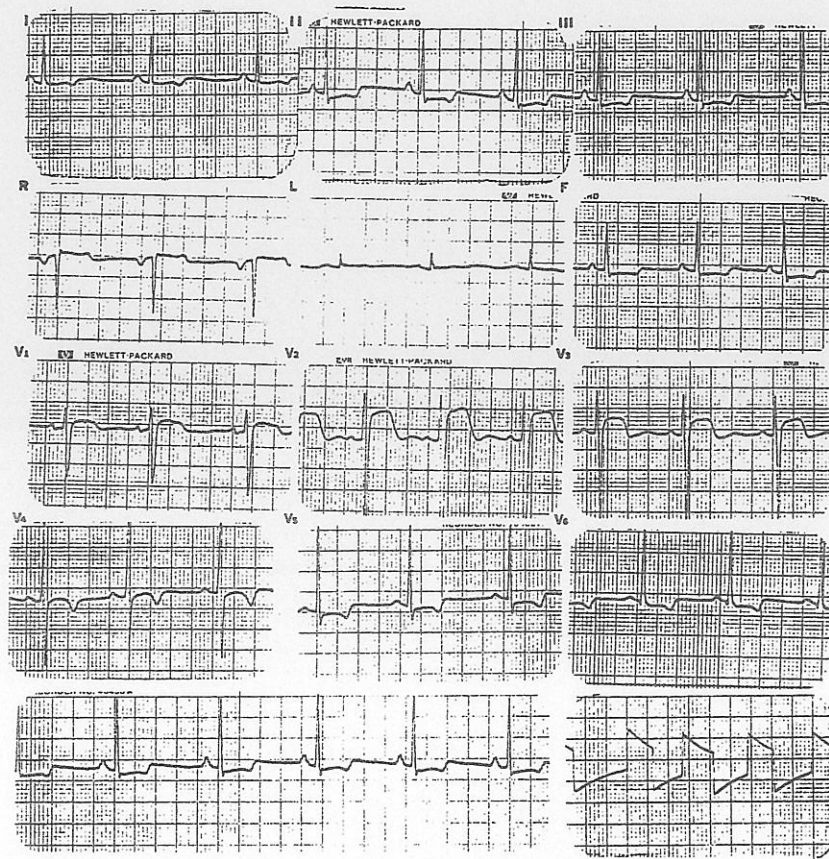


Figure 2

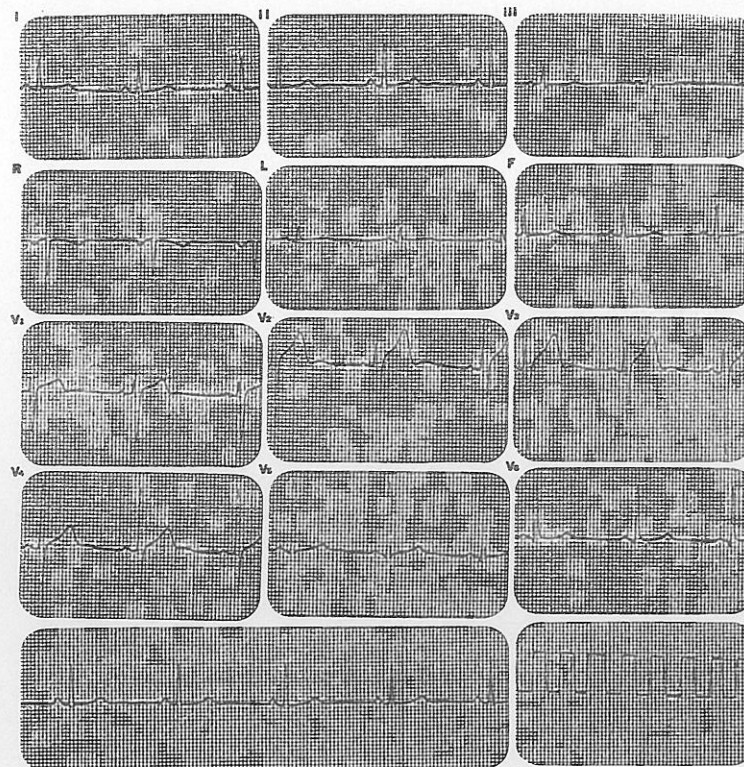


Figure 3

A stress test using bicycle ergometer was done, during which the patient's resting pulse rate rose from 75/minute to a maximum of 192/minute. His blood pressure rose from 130/90 prior to the test, to a maximum of 210/90. When compared to the resting study, the stress ECG was unchanged. Post-exercise Thallium scanning was performed by a consultant cardiologist who concluded that there was "no evidence of any exercise-induced myocardial ischaemia".

An echocardiogram was undertaken the following day, showing "some mild left ventricular hypertrophy", otherwise being a normal examination. No evidence of pericardial effusion or intracardiac masses was found.

Throughout the period of investigation the officer remained asymptomatic. Afterwards, he was allowed to continue flying duties. A follow-up ECG performed during an examination five months later (Figure 3) showed resolution of the abnormal features seen in the tracings of interest.

Discussion

Manning, Thatcher and Anderson have presented the conclusions of the Canadian Defence Force long term study of routine ECG findings on military personnel, and have elegantly concluded that:-

"Whenever a significant change occurs in the electro-cardiogram of one of our military aircrew population, a careful and thorough investigation is carried out before he is allowed to continue as a pilot. The situation is difficult, since a highly-trained pilot with a record of high performance represents a large investment on the part of the Department of National Defence and it is essential that every effort be made to keep him in the air"¹.

Although an Observer and not a Pilot, the case presented illustrates exactly the dilemma which sometimes faces the examining medical officer. This patient had quite striking abnormalities of ECG, but investigation failed to detect any significant underlying aetiology. The changes observed in Figures 1 and 2 usually provide evidence of myocardial infarction, pericarditis or ventricular aneurism. It seems that the most likely diagnosis in this case is healing pericarditis. He was allowed to continue flying, since he had no other risk factors and remained clinically well. It was felt that he was unlikely to fall victim to inflight incapacitation.

The issues which are raised by this case are as follows:-

- How common are inflight incapacitations? What effect do they have? How many are of cardiac origin, and are those of cardiac origin predictable?

- If an ECG tracing is taken during a routine medical examination of an asymptomatic person, what can it reliably predict?

Inflight Incapacitations

A pilot is considered incapacitated if he or she suffers some event which prevents normal performance of duty or interferes with the ability to cope with an emergency situation^{2,3,4}. The recorded incidence of inflight incapacitations differs between General Aviation (GA) operations, commercial flights and military aviation. This could be partially attributed to differences in reporting trends and pilot perspectives, but also to different health and performance standards required in different areas.

Booze has published his analysis of data obtained from the National Transportation Safety Board (NTSB) in the United States, dealing with the period 1975 to 1982². During that period 30,447 GA accidents were recorded, 5,136 of which were fatal. Inflight incapacitations were shown to have been the cause of 92 of the total accidents, and 77 of the fatal accidents. These figures may be deceptive, since in many cases pilot incapacitation may have played a role which was too subtle to have been detected; for example, failure to concentrate on navigational procedures or desire to land an aircraft modifying an otherwise cautious pilot's usual careful flying. As well, some causes of incapacitation such as psychiatric disturbance or gastrointestinal dysfunctions might never be detected by investigators.

Booze calculates the overall risk of an inflight incapacitation due to cardiovascular causes as 1 incapacitation per 2,683,629 hours flown, assuming that the outcome of such an event is an aircraft accident. Indeed, the rate of accidents due to incapacitation is 3 per 1,000 GA accidents, or 15 per 1,000 fatal accidents, and cardiovascular causes account for only 2% of all fatal accidents.

Authors from the Medical Department of the international airline Air France have reviewed their records of inflight incapacitation between 1968 and 1988³. There were 10 cases during this period, giving a rate of 0.44 per million flight hours. No accidents were demonstrated to have resulted from these incidents. Of the 10 cases, two were of cardiac origin (one of atrial fibrillation, one of sinus tachycardia); two were due to epileptic convulsions, two to duodenal haemorrhage, one to labyrinthitis and one to hypoglycaemia. The remaining two were due to hypoxia or carbon dioxide toxicity. The authors postulate that the absence of cardiac ischaemia as a factor in any of these incidents is "related to the careful medical supervision in the domain of coronary insufficiency".

Of more direct relevance to this case is data from a large military air force⁴. In the 11 years 1970-1980, the United States Air Force (USAF)

documented 146 cases of inflight incapacitation, 62 in pilots, 14 in navigators and 70 in student pilots. Half of these incidents occurred in training aircraft. Fifty-six incapacitations were directly attributable to illness, five of the 56 due to suspected myocardial infarction. No cardiac arrhythmias were diagnosed. Only one cardiac incapacitation resulted in death - a T-29 pilot suffered chest pain then became unconscious, subsequently dying in flight. Their conclusion was that, "although coronary artery disease is of great interest to the aeromedical community, it does not appear to be a significant in-flight problem in the USAF."

It would seem from these data that inflight incapacitation is in fact a rare event, and that it makes only a small contribution to aviation accidents and loss of aircraft. Furthermore, cardiac causes represent only a very small proportion of the causes of incapacitation.

How useful is the resting ECG as a predictor of cardiac disease?

Although it is clear that cardiac events leading to incapacitation in flight are exceedingly uncommon, it is not clear whether this is due to a successful program of screening for underlying cardiac disease, or just good luck. One of the commonest modalities used to detect incipient cardiac disease in aircrew is the resting ECG. Since this discussion involves *screening* and not the use of the ECG as a *diagnostic* tool in symptomatic aircrew, the relevant literature is surprisingly limited.

Data on the incidence of Ischaemic Heart Disease (IHD)/Coronary Artery Disease (CAD) in pilot populations is conspicuously lacking. Data from the Airline Pilots' Association (ALPA) has been analysed and compared to general population data from the Framingham study⁵. The 29 to 34 year pilot age group has an incidence of IHD more than 19 times less than that of the same age group of Framingham men, although this drops to only a 1.25 times lesser incidence when the 55 to 59 year age groups are compared. This seems to show that IHD is an extremely unlikely possibility in the younger asymptomatic group.

How useful is the ECG in screening for cardiovascular disease? A review of all 40 relevant studies of ECG abnormalities in otherwise asymptomatic men has shown that the resting ECG is a notably *poor* predictor of cardiac outcomes in asymptomatic men, except where recognised risk factors are present, most notably diabetes mellitus, hypertension, hypercholesterolaemia and cigarette smoking⁶. It is notable that this literature review dealt with male subjects only and perhaps reiterate comments previously made in this journal regarding

the lack of studies of women's health in military medicine⁷.

A cohort of 7,682 asymptomatic men of Japanese background was studied over a 12 year period in Honolulu. The ages of the men varied from 45 to 68 at recruitment. Certain ECG features, left ventricular hypertrophy in particular, were clearly associated with adverse cardiovascular outcomes, and yet in such a large cohort the ECG features which imparted high risk were still not clearly determined, and a further study was recommended⁸!

Since the usefulness of the resting ECG is demonstrably limited, is the stress ECG of more value? Joy (1988) initially asserted that performing a stress ECG on aircrew was of no value⁹, but subsequently a South African group have demonstrated that computer analysis of evolving ST segment changes in stress ECGs had a more useful positive predictive value¹⁰.

Summary and Conclusions

A case has been presented of an asymptomatic RAN Observer who was noted (somewhat belatedly) to have ECG changes suggestive of acute myocardial ischaemia. Although the diagnosis never became clear, a combination of stress ECG and Thallium study was unremarkable, and an echocardiogram revealed no abnormality. It seems that the diagnosis was resolving pericarditis. The patient did not undergo the invasive investigation of cardiac angiography, since we were satisfied that the diagnostic modality used was of satisfactory sensitivity. A Canadian study of 171 men with CAD showed that age and pain were the most powerful predictors of acute ischaemia, and that the combination exercise ECG and Thallium study had a sensitivity of 78% and specificity of 88%, certainly comparable to angiography¹¹.

An attempt has been made to show that the use of a resting ECG to predict adverse outcomes (in particular, sudden inflight incapacitation due to a cardiac event) is of modest use for two reasons. First, these events are rare, and second, the tool to detect them (the ECG) is of poor sensitivity and limited specificity. Whilst the author does not advocate a retreat from the use of ECGs in aircrew medical examination, Medical Officers must have some perspective of their usefulness.

Acknowledgments

I would like to thank Surgeon Captain Peter Habersberger, RANR and Surgeon Rear Admiral (retired) Geoffrey Bayliss for their review of the case and a previous manuscript which I had initially intended for a different forum.

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Abstracts From The Literature

Prepared by Andy Robertson

Prusiner SB, 1995. The prion diseases. *Scientific American* 1:48-57

Prions, once dismissed as an impossibility, have now gained wide recognition as extraordinary agents that cause a number of infectious, genetic and spontaneous disorders.

Comment: Prions are now believed to be the causative agents for kuru, Jacob-Creutzfeldt disease, Gertsman-Straussler-Schamker disease, fatal familial insomnia and possibly other human diseases. This is a useful summary of the history of the prion diseases and the possibilities for future treatment. Whether prions have an aetiological role in Alzheimers disease or Parkinson's disease requires further investigation.

Burkle FM Jr, Orebaugh S, Barendse BR, 1994. Emergency medicine in the Persian Gulf War - Part 1: Preparations for triage and combat casualty care. *Ann Emerg Med*; 23(4):742-7.

We report the planning and preparations for triage and emergency care at a unique Level 1 desert trauma facility before the Persian Gulf War. The facility was designed to accomplish sorting, resuscitation, and emergency life and limb saving surgical functions of massive numbers of casualties within the war zone. Plans included triage preparations for neuropsychiatric patients and the biologically and chemically contaminated. Emergency physicians were essential to the triage planning and process.

Burkle FM Jr, Newland C, Orebaugh S, Blood CG, 1994. Emergency medicine in the Persian Gulf War - Part 2. Triage methodology and lessons learned. *Ann Emerg Med*; 23(4):748-54

Study Objective

To describe the conventional triage consequences of war zone casualties compared against expected NATO triage casualty estimates; the influence of the Revised Trauma Score on triage sensitivity; and evaluation of physiological parameters considered potentially useful to improved triage specificity and sensitivity.

Study Design

A retrospective analysis of conventional triage and Revised Trauma Score data.

Setting

A military field trauma centre during the primary ground assault into Kuwait.

Type of Participants

Four hundred and sixty-one coalition and enemy force personnel who were triaged as casualties.

Main Results

Triage categories for coalition and enemy forces were remarkably similar, but deviated significantly ($P < 0.001$) from expected NATO triage casualty estimates. Medical diagnoses were 6% and 11% of these forces, respectively. Only 7% of enemy forces casualties and 2% of coalition casualties required retriage. Neuropsychiatric triage categories identified 16 immediate casualties potentially at risk for post-traumatic stress. The Revised Trauma Score for triage failed to provide significant triage sensitivity.

Conclusions

Conventional triage is a useful tool for war and conflict; it is experience dependent. Had the anticipated number of casualties actually occurred in this war, we conclude that the triage process would have benefitted from additional information, probably physiologic information, to improve the sensitivity and specificity of our findings.

Burkle FM Jr, Newland C, Meister SJ, Blood CG, 1994. Emergency medicine in the Persian Gulf War - Part 3: Battlefield casualties. *Ann Emerg Med*; 23(4):755-60.

Study Objective

To report the type and frequency of battlefield casualties and the procedures performed to treat them.

Study Design

A prospective analysis of trauma record data incorporating anatomic categories and the Revised Trauma Score.

Setting

Two military field trauma centres during the primary ground assault into Kuwait.

Type of Participants

Four hundred and two trauma admissions of coalition and enemy forces.

Main Results

Forty-eight percent of casualties suffered fragmentation wounds, including 43 land mine injuries. Only 10% sustained gunshot wounds. Forty-four percent of casualties had injuries limited to the extremities; 29% had combined extremity injury and injury to another anatomic region. Extremity wounds occurred nearly twice as frequently in the lower extremities as in the upper extremities. Surgical procedures were undertaken in 164 patients, with 108 debridements for major soft tissue injuries or open fractures.

Conclusion

The composite casualty admitted to US Navy-Marine trauma facilities was injured by shrapnel in the lower extremity and required surgical debridement only. Soldiers with land mine injuries, as in other wars, were among those in greatest need of emergency resuscitation.

Comment: These three articles by Burkle et al. give a good overview of the trauma casualty handling during the Gulf War. Mines continue to be a major resuscitation concern.

Additional comment from Dr Jeffrey V. Rosenfeld

This paper is of great interest and describes very well the spectrum of injuries sustained in a modern battle, particularly demonstrating a high incidence of extremity shrapnel wounds. The activities of a field surgical unit are well described and have important implication for the work of the Australian Army's Forward surgical Teams (formerly mobile field surgical teams).

Bulger RE, 1994. Toward a statement of the principles underlying responsible conduct in biomedical research. *Acad Med*; 69(2):102-7

Biomedical research still does not have clear, written, agreed-upon underlying values (for a number of possible reasons that are discussed), and a variety of new pressures are making it necessary to formulate

such principles. Toward that goal, this essay first traces the development of the underlying principles that have been formulated in the sphere of human subjects research, from the ancient Hippocratic injunction of do no harm to the three principles identified in 1979 by the National Commission for Protection of Human Subjects of Biomedical and Behavioural Research; respect for persons; beneficence; and justice. Using these principles as a pattern, the following "candidate principles" are proposed for biomedical research to stimulate discussion and the development of consensus among biomedical scientists: honesty of scientists (which encompasses the essential values of integrity, objectivity, verifiability, and truthfulness); respect for others (including respect for research subjects - both humans and other animals - colleagues, and the environment); scholarly competence (which is related to the processes of obtaining and passing on knowledge); and stewardship of resources (involving obligations to protect society from the problems intertwined with scientific advances). Guiding principles of this type must be articulated so they can be transmitted to upcoming scientists, who then can productively and responsibly help shape the future of the research enterprise.

Comment: All biomedical research within Defence needs to be considered by the Australian Defence Medical Ethics Committee (ADMEC). Bulger has attempted to distil some of the main concepts required in the ethics decision making process..

Tucak A, Lukacevic T, Kuvezdic H, Peter Z, Novak R, 1995. Urogenital wounds during the war in Croatia in 1991/1992. *J Urol*; 153(1):121-2.

There were 142 war injuries to the urogenital organs in 115 of 4,425 wounded patients treated at our clinical hospital during 18 months of warfare in Osijek, Croatia. Kidney injury was the most common (64 cases) and urethral injury (4) the least common, with a relatively large number of ureteral injuries (11). Two thirds of the injuries were associated with other trauma, most frequently abdominal injuries. The mortality rate was high (15.6%), explained by the proximity of the battlefield and resulting rapid

patient transport (average 52.21 minutes), which excluded the possibility of separating out the moribund cases, as well as the exceptional destructive power of modern explosives and firearms, and associated wounds of the vital organs. Of the wounded 60% were members of the Croatian armed forces, one was a member of the United Nations Professional Force and 39.13% were civilians. Surgical intervention was characterized by a tendency toward conservation and the avoidance of organ sacrifice. Thus, nephrectomy was performed in only a quarter of the cases of renal injury. Nevertheless, orchidectomy was performed in two thirds of the cases of testicular injury. In five of eight cases of corpus spongiosum injury the tunica albuginea was primarily reconstructed with free transplantation of the fascia lata. For ureteral injury resection with primary suture yielded good results in contrast to stents without resection in cases of ureteral wall contusion, which resulted in ureteral stenosis in our patients.

Comment: A useful overview of the urogenital injuries which might be expected in conflict.

Ness L, 1994. Averting the plague. *Int Def Rev*; 11:51-53.

Comment This is a very useful overview from the United States of the technology and progress of the Biological Integrated Detection System (BIDS), the mainstay of the US biological warfare detection system.

Edmonds C, 1995. Australian diving medicine: A retrospective 1965-1995. *SPUMS Journal*; 25(1):2-8.

Comment: Carl Edmonds has provided a succinct and interesting history of diving medicine in Australia over the last 30 years. The RAN and the School of Underwater Medicine receive particular note in this dissertation and the ADF can be proud of the many Naval medical contributions in this period.

Prepared by Jeffrey Rosenfeld

Bickell WH, Wall MJ, Pepe PE, *et al*, 1994. Immediate versus delayed fluid resuscitation for hypotensive patients with penetrating torso injuries. *New Engl J Med*;331(17):1105-1109

Background

Fluid resuscitation may be detrimental when given before bleeding is controlled in patients with trauma. The purpose of this study was to determine the effects of delaying fluid resuscitation until the time of operative intervention in hypotensive patients with penetrating injuries to the torso.

Methods

We conducted a prospective trial comparing immediate and delayed fluid resuscitation in 598 adults with penetrating torso injuries who presented with a pre-hospital systolic blood pressure ≤ 90 mm Hg. The study setting was a city with a single centralised system of pre-hospital emergency care and a single receiving facility for patients with major trauma. Patients assigned to the immediate-resuscitation group received standard fluid resuscitation before they reached the hospital and in the trauma centre, and those assigned to the delayed-resuscitation group received intravenous cannulation but no fluid resuscitation until they reached the operating room.

Results

Among the 289 patients who received delayed fluid resuscitation, 203 (70 percent) survived and were

discharged from the hospital, as compared with 193 of the 309 patients (62 percent) who received immediate fluid resuscitation ($P = 0.04$). The mean estimated intra-operative blood loss was similar in the two groups. Among the 238 patients in the delayed-resuscitation group who survived to the postoperative period, 55 (23 percent) had one or more complications (adult respiratory distress syndrome, sepsis syndrome, acute renal failure, coagulopathy, wound infection, and pneumonia), as compared with 69 of the 227 patients (30 percent) in the immediate-resuscitation group ($P = 0.08$). The duration of hospitalisation was shorter in the delayed-resuscitation group.

Conclusions

For hypotensive patients with penetrating torso injuries, delay of aggressive fluid resuscitation until operative intervention improves the outcome.

Comment. The policy of withholding fluid resuscitation from patients with extensive bleeding at the scene of the trauma and in the emergency room merits further controlled studies to examine this population of patients in more detail before this major change in resuscitation policy is adopted. The situation of penetrating trauma and severe head injury adds a further layer of complexity and prolonged hypotension is detrimental to the brain injury in this situation.

Prepared by James Ross

Wright GM, Cato A, Webb DR, 1995. Microsurgical vasovasostomy in military personnel. *Aust NZ J Surg*; 65(1):20-26.

This paper details the operative techniques, results and reasons for reversals of vasectomy in military personnel. Fifty-two reversals were performed by two surgeons (AC & DW) over a 7 year period. Data collection was by (i) retrospective analysis of service documents, surgical registers and laboratory records and (ii) response to a questionnaire. The interval between original vasectomy and reversal varied from 5 months to 16 years. Change of sexual partner was the most common reason for requesting the procedure. There were two recorded postoperative infections and no postoperative mortality. Post-

reversal semen analysis proved anastomotic success in 49 out of 51 cases (96%). Semen analysis was not returned for the remaining case. Of the couples who had been trying for at least 18 months, 28 out of 43 (67%) had conceived, including one miscarriage. A further seven cases had been trying for less than 18 months, or had no opportunity due to physical separation. Two of these seven patients ended their relationship soon after operation. Pregnancy outcome was unknown in three cases.

Comment: An interesting review of military personnel. There should be potential for a wide range of epidemiological research at all of the ADF bases and establishments.

Jones FD, Koshes RJ, 1995. Homosexuality and the military. *Am J Psychiatry*; 152(1): 16-21.

Objective

Homosexuality has remained a focus of military concern despite society's increasing acceptance of homosexual men and women and evidence that homosexuals have served and currently serve in the US armed forces. President Clinton has stated a determination to end discrimination against homosexuals in the military and reverse the exclusionary policy on homosexuals serving in the armed forces. The authors review the history of the policy of the US military to exclude homosexuals from serving in the armed forces.

Method

The data for this study were drawn from military archives and court cases that have shaped US policy excluding homosexuals from serving in the armed forces. The three main arguments are addressed.

1. Homosexuality is a mental disorder rendering a person unstable
2. Homosexual service members are a source of poor morale for military units
3. Homosexual service members are poor security risks

Results

Considerable evidence demonstrates that homosexuals in the military pose no documented threat to national security and show no evidence of poor work performance.

Conclusions

Although issues of morale and fraternisation in the military remain challenges, no evidence in this review supports the exclusion of homosexuals from service in the US armed forces.

Comment: A useful contribution to the debate.

Baker MS, 1994. Advanced trauma life support: is it adequate stand-alone training for military medicine? *Mil Med*; 159(9):587-90.

Advanced Trauma Life Support (ATLS) is a 2 day course on handling the acutely injured patient. It has been developed by and is directed by the American College of Surgeons, and teaches a systematic approach to the care of the injured patient. It is relied upon as a teaching tool throughout the active and reserve military medical departments. This article will review its strengths and weaknesses, and will show that it is not an adequate "stand alone" training

tool. ATLS does not address the combat casualty, nor the combat scenario. Special courses must be utilised to train military medical providers for the conflicts and casualties of the future.

Comment: The articles by Baker and Koehler et al. (reviewed last issue) address similar themes. Is ATLS or EMST the best training for our military health services and, if not, how can we improve it? The concepts of ATLS need to be spread to a wider audience than the present one and need to incorporate combat considerations, possibly as part of a Combat Casualty Care Course.

Pearn J, 1994. The earliest days of first aid. *BMJ*; 309(6970): 1718-20.

First aid, as a profession in its own right, has a history of only 120 years. It evolved from the teachings of the Royal Humane Society and military surgeons, who saw the wisdom of training in splinting and bandaging for battlefield wounds. In 1878 two Aberdeenshire military officers, Surgeon-Major Peter Shepherd of the Royal Herbert Military Hospital, Woolwich, London, and Colonel Frances Duncan established the concept of teaching first aid skills to civilians. This radical new enterprise, conducted under the auspices of the newly formed St John Ambulance Association, was a natural evolution from the body's philanthropic and ambulance transport work. Shepherd conducted the first class in the hall of the Presbyterian school in Woolwich using a comprehensive first aid curriculum that he had developed. Within months of that first class, local Woolwich civilians used their skills when the pleasure boat Princess Alice sank in the Thames at Woolwich, killing 600 people. Within a decade, the new discipline of first aid spread rapidly throughout the world, and by the end of the 19th century, hundreds of thousands of St John first aid certificates had been awarded in four continents. Shepherd's pioneering classes changed the world's concept of the need for the provision of skilled prehospital care.

Comment: Military Medicine has played an important role in many aspects of medicine. This is another excellent historical example.

Moorhead RG, Laurence CO, 1994. Continuing medical education needs for local general practitioners. *Aust Fam Physician*; 23(10): 1929-33.

A survey was conducted of the expressed continuing medical education needs of a group of 64 suburban

general practitioners attached to a South Australian Hospital. The top five stated urgent and necessary training needs were acute and emergency disease management, diabetes management, terminal care, dermatology and medicine. The form of CME most preferred was patient/clinical practice and the greatest barriers to CME were stated as lack of time and loss of income. Practitioners with less than 10 years experience significantly chose training in ear, nose and throat ($p < 0.01$), rheumatology ($p < 0.01$) (Fisher's exact test, two-sided,) compared with more experienced practitioners. Those in group practice significantly chose training in orthopaedics ($p < 0.01$, Fisher's exact test, two-sided) and the management of change ($p = 0.037$, Fisher's exact test, one-sided) more than solo practitioners while female practitioners significantly expressed the need for ante natal care training (Chi square = 8.85; $df = 1$; $p < 0.01$).

Comment: CME is already an important aspect of medical practice and will become an increasingly important aspect of military medical practice. Research on CME in the ADF would provide some useful insights.

Effectiveness of doxycycline combined with primaquine for malaria prophylaxis. GD Shanks, A Barnett, MD Edstein, KH Rickmann. *MJA* 162; 306-309 1995.

Objective

To assess the causal prophylactic activity (activity against the pre-erythrocytic liver stage) of a daily regimen of doxycycline combined with low dose primaquine against malaria in ADF personnel deployed to Papua New Guinea.

Participants and Setting

A 53 strong Australian Army engineer detachment deployed to the north coast of PNG for 42 days starting in July 1993.

Interventions

The soldiers took doxycycline (100mg) and primaquine (7.5mg) daily, starting at least two days before they entered the endemic area and continuing for three days after their return to Australia. No primaquine eradication course was given at that time.

Main outcome measures

The number of soldiers who developed malaria, plasma drug concentrations and drug side effects.

Results

None of the 53 men developed malaria while in PNG. Three developed falciparum malaria two to three weeks after leaving the endemic area, although one of them had taken doxycycline alone because of glucose-

6-phosphate dehydrogenase deficiency. Nine men developed vivax malaria between three and 40 weeks after leaving PNG, and three had relapses. Doxycycline was generally well tolerated, with only three of the men requiring a change of medication to mefloquine because of adverse gastrointestinal symptoms.

Conclusions

Although doxycycline generally provides good protection against malaria infection, it cannot be relied on for causal prophylaxis, even when combined with low dose primaquine. Because the malaria infections occurred only after return to Australia, doxycycline appears to be effective in suppressing malaria while the drug is being taken. Intense, repeated exposure to malaria may require an extended period of chemoprophylaxis on return from an endemic area.

Comment: Prophylaxis against malaria remains problematic. In this study both *Falciparum* and vivax malaria occurred on cessation of medication on return to Australia. Extended chemoprophylaxis as suggested would have to go for 40 weeks after leaving a malarious area, to cover all the cases described here. Primaquine, too cannot be relied upon, with primary attacks and relapses occurring after an "eradication" course.

Newman DG. The ejection experience of the Royal Australian Air Force: 1951-92. *Aviat Space Environ Med* 1995; 66:45-9

This paper reviews the ejection experience of the Royal Australian Air Force (RAAF) between 1951 and 1992. During this period 884 aircrew ejected from their aircraft, with 77 survivors and 7 fatalities. The causes of these ejections were examined, and the injuries received by the ejectees were classified into four categories: fatal, major, minor, and no injuries. Vertebral fractures were the most common type of major injury (35%). Most ejectees received at least one minor injury. There were 7 reported cases in which the ejectee received no injuries. The RAAF ejection experience was found to be comparable with other international series, both in terms of survival rates and injury patterns.

Comment: This paper was based on the presentation at the 1992 AMMA conference which won the inaugural Weary Dunlop prize. I am sure those of you at the Canberra conference will recall the quality of the research reflected in this paper.

MW Skinner, CS Butler, 1995. Necrotising arachnidism treated with hyperbaric oxygen. *Med J Aust*; 162:372-373.

improvement following such treatment. Such reports will come, I hope.

Comment: A paper by the Association's secretary. Very interesting use of hyperbaric chambers, but I wonder about cost-benefit if there is only a minor

Book Reviews

Submitted by Jeffrey V. Rosenfeld

The line of fire: from Washington to the Gulf, the politics and battles of the new military. By Admiral William J. Crowe with David Chanoff, New York, Simon & Schuster, 1993.

This book is much more than the autobiography of Admiral James Crowe who was appointed Chairman of the Joint Chiefs of Staff in the United States of America (USA) in 1985. The reader enters the arcane world of the top echelons of the US military, and is presented with an insider's account of how military leaders are selected. Interestingly, only 30 out of 1400 Captains reach the rank of Admiral in the USA. Admiral Crowe's impeccable career is described in detail. His rapid rise to the top was somewhat unconventional in that he did not spend a lot of time at sea. His career took a side turn when he did a PhD in political science at Princeton. He later became Commander in Chief of the Pacific Forces (CINCPAC). Admiral Crowe believes that the most important priorities of military leadership are flexibility of thought and innovation.

The book gives the reader a candid behind the scenes look at the workings of the Pentagon, and the Joint Chiefs of Staff committee, and their relationship with the President and the Congress of the USA. Admiral Crowe paradoxically shows that although the Joint Chiefs are all powerful militarily, they are also apparently impotent in their influence on a peacetime US Congress and President. This is illustrated with discussion on the determination of the defence budget and the intense lobbying and struggling which must go on to maximise the budget, the political control of

the defence budget, and the critical threshold of Gross National Product beyond which the defence forces would be dangerously compromised. Many parallels can probably be drawn with the Australian situation.

Some of the many and varied topics covered are the optimal size of the US armed forces in peacetime, how military force can be productively employed in peacetime, how Ferdinand Marcos was ousted from power in the Philippines, Middle East diplomacy, the importance of maintaining a military presence in Bahrain, problems with Qaddafi of Libya and the Achille Lauro terrorist attack. Nuclear issues such as the frighteningly realistic nuclear wargame TEWTS in the Pentagon, the complexities in the formulation of the START anti-nuclear proliferation treaty, and the reaction to New Zealand's anti-nuclear stance, are discussed openly.

We are given a behind the scenes glimpse and thus a different perspective on recent events on the world stage vis a vis the standard media analysis reported at the time. There is surprisingly little overt criticism of President Reagan, but one strong message to come through was that when the President's military advice emanated from outside Pentagon control, major problems developed such as the Contra Scandal, Irangate and Starwars initiative.

For those who are interested in an interesting military biography, or a unique military perspective on important world events over the last two decades, or a lesson in how to reach ever higher levels of leadership and responsibility, this book is highly recommended.

Submitted by Andy Robertson

Preston R. 1994. *The Hot Zone*. Doubleday: Sydney, 334 pp.

Ebola and Marburg are highly lethal viral haemorrhagic fevers usually only seen in the wilds of Africa. In *The Hot Zone*, Richard Preston has detailed the recent outbreak of Ebola in a monkey facility in Reston, just outside Washington, DC. In sometimes overly graphic detail, Preston describes the resulting investigation and cleanup of the facility by the Centre for Disease Control and the US Army Medical Research Institute for Infectious Disease. This particular strain of Ebola was fortunately not pathogenic in man. The outbreak does illustrate the ease of spread of potentially highly infectious and highly lethal micro-organisms rapidly around the world.

Preston has included details of the other Ebola and Marburg outbreaks. His clinical descriptions are unfortunately graphically sensationalised and his descriptions of the events are cursory at best. For those interested in the history of the viral haemorrhagic fever and other emerging disease outbreaks, I would recommend *The Coming Plagues* which provides a far more detailed and comprehensive review of the area. Given these criticisms, Preston has produced a very readable book which is essential reading for anyone with an interest in infectious disease or public health. The book has already formed the basis for a documentary, *The Plague Monkeys*, and some of the background for the recent movie, *Outbreak* both of which are recommended viewing.

News & Views

News from The Library *From the Librarian*

The Association's library has just received copies of several volumes of the US Army's publication, *Textbook of Military Medicine*. These have been kindly donated to the Association by the Borden Institute at the Walter Reed Army Medical Center, Washington DC, to whom the Association expresses its gratitude.

Volumes received are:

Conventional Warfare: Ballistic Blast and Burn Injuries
Military Psychiatry: Preparing in Peace for War
Occupational Health: the Soldier and the Industrial Base
Military Dermatology

The library also holds a copy of Medical Consequences of Nuclear Warfare from the same series.

Books in the collection are held by the Journal Editor, Surgeon Commander Russ Schedlich RAN. Loans of books for up to 12 weeks at a time can be arranged by contacting him as follows:-

PO Box 730,
PYMBLE NSW 2073

Telephone (Work) 02 5634563
Facsimile 02 5634519

Member News

Rwanda deployment just part of rewarding career

As a nurse seeking a bit more than a job in a hospital ward, Catherine Rafter decided to join the Air Force.

She certainly got adventure just one year after joining up with a deployment to the shattered central African nation of Rwanda.

Flying Officer Rafter was part of the 300-strong Medical Support Force sent in August last year to provide treatment for sick and injured United Nations personnel as well as civilians.

They set up the medical facility in a trashed hospital in the capital, Kigali, by cleaning up a wing which had fallen into disrepair.

As a member of the Royal Australian Air Force component of the contingent, Flying Officer Rafter was to be primarily involved in medical evacuations conducted by aircraft.

They were called out to a shooting incident in a camp which injured about 50 and killed 12 people.

With three medics and two doctors, Flying Officer Rafter flew in a helicopter to the camp.

As they went about the process of triage (determining which people needed immediate

assistance) the Australians saw the horrible injuries - gun shot wounds to faces and chests, machete wounds and broken bones.

They took eight of the injured back to the hospital for emergency treatment.

With the hospital on alert, x-rays and tests were conducted quickly and surgery began.

"The whole place was cranked up for it," said Flying Officer Rafter.

"We saved some lives," she said.

"One little girl died that night when we got back to the hospital and that knocked us around because we worked on her from the start."

As she looks back, Flying Officer Rafter is finding the experience of serving in Rwanda more rewarding as time passes.

"It was extremely rewarding and I learnt a hell of a lot," she said.

Flying Officer Rafter joined the Air Force in August after working in a pathology company.

"I just wanted to do something different rather than go back to the public hospital system," she said.

*Courtesy The Mercury Newspaper,
Hobart Tasmania*



Flying Officer Catherine Rafter in Rwanda

New Members

The AMMA would like to welcome the following new members.

WGCDR David Emonson

COL William Molloy

CPL David Dudley

SURG LCDR Donald Faithful

CAPT Lewis Macleod

Robin Scott

SQNLDR Geraldine MacCarrick

Dr Adrian Neath

LT COL Clifford Hughes

FLGOFF Catherine Rafter

MAJ Warwick Gordon-Smith

Dr Ross Mills

Dr Ian Davies

FLT LT Richard Ralph

CAPT Lionel Crompton

CAPT Lawrence Kohan

Ms Cindy Masterson

Do you know where these members are?

AMMA does not have a current address for these members.

LT Ross G. Atkinson

CAPT Leonard B. Brennan

SBLT N.A.J. Cusack

LT Naomi Gallagher

MAJOR Anthony J. Gill

FLT LT Gregory Hampson

Dr T.A. Hoffman

LT Nicole Leeks

CPL Elizabeth McNeil

LT Elizabeth Royal

SBLT Elizabeth Stephenson

SURG LCDR Neil Westpalen

MERCHANDISE

Items of merchandise featuring the AMMA logo are still available, particularly ties and T-Shirts. You should definitely get these before the next Conference - all the best dressed delegates will be wearing them.

For details contact Nader Abou Seif on 03 7496777

Obituary

Colonel D.R. Leslie, AM, ED, MID, QHS, MBMS, FRCS, FRACS, FACS

On November 7 1994, Douglas Leslie, a foundation member of the Australian Military Medicine Association, passed away following complications of a myelodysplastic syndrome. In a surgical career which started more than half a century ago, he achieved high distinction in both the clinical and academic branches of this chosen field.

A graduate of Melbourne University in 1937, he obtained the Master of Surgery prior to joining the Army. He had a distinguished career in North Africa, the Middle East, the Pacific and New Guinea, where his achievements with little available resources earned great respect. Sir William Refshauge who, as Major Refshauge, commanded him during the Wau campaign described him as "a most reliable and efficient surgeon in forward areas who saved many lives and limbs. He was a person who gave us all confidence and was a man of great integrity. In fact he was wonderful."

His position as Consultant Surgeon to the Australian Army led to his being selected to visit Vietnam to advise Major General Colin Gurner on surgical requirements. He stayed for a short period after this and later personally briefed all the early volunteers. Doug Leslie's experiences in World War II showed him that much could be achieved with skill and a small list of essential instruments. It was typical of this attitude that his reply to Major General Gurner's query as to whether he required all the equipment on a request from Vietnam was: "No, I don't - but they do."

In his memorial address, Major General Gurner stated that Doug Leslie's "experiences in North Africa and the New Guinea campaigns, at the 'blunt end' of Army Headquarters, and in Vietnam made him, to my mind, the greatest battle surgeon in Australia". His Membership of the Order of Australia

"for exceptional services to the Australian Army, particularly in the field of military medicine" was well deserved.

His civilian career was no less distinguished. He served at the Royal Melbourne Hospital in a number of capacities over many years, and was General Surgeon to the Royal Women's Hospital as well as running a busy private practice. In 1967, he was appointed Honorary Surgeon to Her Majesty, the Queen. He was a member of many other bodies including the Australian Resuscitation Council, of which he had been Chairman, the Australian Association of Surgeons, the International Society of Surgery, the Pan Pacific Surgical Society, the Anti-Cancer Council and various Hospital Boards. He had been an examiner and Counsellor of the Royal Australasian College of Surgeons, a university examiner in both surgery and Anatomy, a Fellow of the Australian Medical Association, and was a Fellow of both the Royal College of Surgeons and the American College of Surgeons.

Douglas Leslie joined the Australian Military Medicine Association in 1992 and maintained his involvement through 1994, attending the 1994 conference in Melbourne even though requiring ongoing medical treatment for his condition.

He leaves three children, Sue, John and Andrew - John following him in a surgical career.

Doug Leslie's military and civilian surgical careers provide an example to those who share his field of endeavour.

Nader Abou-Seif

Written on the Kokoda Track by SGT "Deacon" Kelly
2/33 Battalion 1942 and dedicated to Douglas Leslie

ARMY DOCTOR

In a teaming, steaming clearing
On the virgin jungle rim,
Stands a little spot of mercy
In the midst of human sin.
It's a tiny Red Cross Hospital
A place of ease and rest,
Where the mark of man's bestiality
By God is recompensed.

All around in pungent forests
Slaughter foul and cracking guns,
Take their toll of human bodies
'Neath the reeking scorching sun.
Down a winding bush-girt pathway
Ankle deep in clinging mud
come the victims of the battle
Helpless, aimless, spilling blood.

In a tent on marshy richness
By a stream that's swift and pure
Rich endowed with healing magic
Is the hand that's cool and sure.
It's the hand of the Army Surgeon
Waiting patiently and calm.
A blessing to the wounded
To the sick a healing balm.

From a hundred thankful homesteads
In a sunny beach-bound land
Grateful hearts will turn towards him
Of the sure and learned hand.
Prayers of gratitude will reach him
In the peaceful years to come.
A tribute to his staunchness
In a job so nobly done.

Conference Reports

St Petersburg in Autumn or Russian to a Medical Conference *CPL Dave Andrew, RAAF College*

I was fortunate to attend the 7th International Symposium of Weapons Traumatology and Wound Ballistics in St Petersburg Russia from 19-24 September 1994. The conference venue was at the Belye Nochi (White Nights) Sanatorium (Health Resort) in the Karelian Isthmus on the Gulf of Finland, 38 kilometres from St Petersburg.

Defence and civilian personnel from 23 countries attended and a good time was had by all. Topics covered included gunshot wounds, mine

blast injuries, blast injuries and new treatments in external fixation.

It was a very intensive workload with the ballet (they had Fosters Light in bottles to drink during the performance), two official banquets (string orchestras unlimited vodka and mystery meat), and several bus trips for souvenirs eventually taking its toll. We had to adjourn to the bar each night to relax.

The conference was considered a great success by all who survived. Held every three years, I look forward to the next conference wherever it is held with much anticipation.

Conference & Meeting Calendar

Date	Conference	Venue
22-24 July 1995	Australian Society of Periodontology Meeting	Gold Coast
31 July-1 August 1995	The Future of Nursing	Canberra
6-12 August 1995	2nd World Congress on Wilderness Medicine	Aspen, Colorado
7-11 August 1995	European Bioethics Seminar	Netherlands
12 August 1995	Elizabeth Kenny VP50 Conference	Townsville
22-25 August 1995	Burns in the 90's - ANZBA	Gold Coast
25-27 August 1995	TMJ Disorder Meeting	Adelaide
28 August-3 September 1995	International meeting on Hepatitis C and D	Gold Coast
1-3 September 1995	AMMA Conference	Sydney
7-10 September 1995	AMSANZ Meeting	Adelaide
20-22 September 1995	Asia Pacific Conference on Occupational Health and Safety	Brisbane
22-23 September 1995	Second National Nursing History Conference	Canberra
24-29 September	Microbes in the ACT	Canberra
28-30 September 1995	Nursing and Methodology Conference	Sydney
15-20 October 1995	International Society of Haematology Meeting	Brisbane
20-26 October 1995	International Congress of Aviation Space Medicine	London
23-27 October 1995	World Dental Congress	Hong Kong
19 December 95-2 January 1996	Antarctic Congress on Therapeutic Hypothermia	Antarctic
19-23 January 1996	Asian Pacific Dental Congress	Bombay, India
1-6 February 1996	23rd International Congress of Internal Medicine	Manila
16-19 March	15th Australian Orthodontic Congress	Melbourne
26-30 April 1996	RACS 13th Convocation	Sydney
10-13 June 1996	7th International Congress of Infectious Disease	Hong Kong
17-22 November 1996	6th International Conference on Emergency Medicine	Sydney

AMMA 1995 Conference Program

Australian Military Medicine Association Annual Scientific Conference 1995 Conference Program

- 1230 Registration
- 1300 Official Opening - *Hon G Punch, Minister for Defence, Science and Personnel*
- 1325 President's Address - *Sqn Ldr N Abou-Seif RAAF*
- 1350 South Pacific peacekeeping - *Surg Cmdr H Foster RANR*
- 1415 Casualty management and evacuation in Somalia - *Surg Leut A Robins RAN*
- 1440 Trauma surgery in Rwanda - *Maj J Crozier*
- 1505 Afternoon Tea
- 1530 Vietnam and Asia - past, present and future - *Mr D Sheldon (Vis Surg RPAH)*
- 1555 Training for military surgery - the Rwanda experience - *Gp Capt R Black RAAF*
- 1620 Re-defining the military medical benefit
- *Prof R Southby (Friesen Prof of Intl Health, The George Washington University)*
- 1900 Conference Dinner
Occasional Address - *Surg Capt Sandy Ferguson RANR*

Saturday, 2 September 1995

- 0800 Australian Military Medicine Association ANNUAL GENERAL MEETING
- 0900 Laparoscopic hernia repair - *Surg Lcdr R Page RAN*
- 0925 Tuberculosis - *Dr J Lee (Snr Resp Phys, RPAH)*
- 0950 Multi-media education - *Gp Capt A McKay RAAF*
- 1015 Morning Tea
- 1035 Laser refractive surgery - *Surg Lcdr R Wolfe RAN & Lcdr S Schallhorn USN*
- 1100 Operation Buru - *Wg Cmdr C Griffiths AM, RAAF*
- 1125 Maritime casualty estimation - computer modelling and the DERWENT experiments
- *Mr B Walsh (AMRL, DSTO)*
- 1215 Lunch
- 1315 Vaccines - *Dr T Ruff (Fairfield Inf Dis Hosp, Melb)*
- 1340 Noise trauma - *Dr B Scrivener AM (Cons Otolologist, RPAH)*
- 1405 Handling a medical catastrophe - *Col P Byrne AM*
- 1455 Afternoon Tea
- 1515 Patello-femoral pain - *Capt L Kohan*
- 1540 Mine blast trauma - *Cpl D Andrew*
- 1605 Obesity and overweight: cause and control - *Assoc Prof I Caterson (Dir Metabolic Lab, RPAH)*

Sunday, 3 September 1995

- 0900 Emerging viral diseases - *Surg Lcdr A Robertson RAN*
- 0925 Casualty risk management in a nuclear environment - *Dr G Jenks (AMRL, DSTO)*
- 0950 Reorganising military health care - its impact on nursing
- *Col J Southby (Chief, Dept of Nursing, Walter Reed Army Med Ctre, Washington DC)*
- 1040 Morning Tea
- 1105 Preventive and environmental medicine - are we doing enough? - *Gp Capt R Fawcett RAAF*
- 1130 A method for reducing recruit training injuries - *Maj S Rusdzski*
- 1155 Medical management of chemical warfare casualties - the Israeli experience
- *Lt Col I Tur-Kaspa (Head, NBC Branch, Medical Corps, Israeli Defence Force)*
- 1220 Morbidity in the Australian Defence Force - an epidemiological survey
- *Dr G Quail (RAAF Williams)*
- 1245 Presentations and Close

Research Grant Winner

The Council of the Australian Military Medicine Association are pleased to announce the awarding of the 1995 Research Grant to Drs G Quail and A Neath. The value of the grant is \$1500.

Quail and Neath are undertaking an epidemiological study of morbidity in the Australian Defence Force, based on a survey of primary care

presentations at RAAF Bases Laverton and Point Cook in 1993. The results of this survey will be statistically compared with a similar study of general practice presentations.

Dr Quail will be presenting an update on the study at the 1995 AMMA Conference in Manly.

Tertiary Education in Military Medicine

Discussion is on-going in the Office of the Surgeon General on the best approach to tertiary education and qualification in military medicine. This has been a long term aim of AMMA, and the Council is supportive of the ADF efforts.

The original plan, as outlined by the Director of Defence Force Clinical Services, Air Commodore Graeme Moller RAAF, was for a graduate diploma leading to a Master of Military Medicine. This was to be based on the medical model used in Masters of

Public Health. Discussions have been continuing with several academic institutions over the past months on these matters.

Air Commodore Moller stresses that the aim now is to develop a programme that will allow all health personnel to seek education and appropriate qualification. He has asked that anyone with any ideas on this matter contact him on 06 266-3811, or fax 06 266-4982.

Naval Health Services' Conference 1995

A highly successful biennial Naval Health Services' Conference was held at the Naval Air Station, HMAS ALBATROSS on 15 to 17 May. The theme of the conference was operational health support, and a number of papers were presented discussing the involvement of RAN health personnel on operational deployments.

Guests during the conference were the Chief of Naval Staff, Vice Admiral Rod Taylor, and the Medical Director General of the Indonesian Navy, First Admiral Mahdi.

On 15 May, the new medical centre at HMAS ALBATROSS was opened by the Minister for

Defence Science and Personnel, the Hon Gary Punch MP. This can only be described as palatial when compared to the fibro complex built many decades ago, and has inpatient accommodation for 10 patients, along with a comprehensive emergency department.

Australian Military Medicine, in conjunction with the Director General, Naval Health Services, will be publishing the proceedings of the Conference in coming months, and these will be forwarded to all members.

Medical Officers' NBC Course

The joint winners of the Australian Military Medicine prize for the ADF Medical Officers' Nuclear Biological and Chemical Medicine Course held at the School of Military Engineering, Holsworthy, in

December 1994, were Surgeon Lieutenant-Commander Chris Strack RNZN and Lieutenant-Commander Neil Westphalen RAN. Each received a book.

From the Office of the Surgeon General

6th Asia Pacific Military Medicine Conference

The Surgeon General, Australian Defence Force, is sponsoring the 6th Asia Pacific Military Medicine Conference to be held in Sydney from 15 to 19 April 1996. The theme of the conference is "The Evacuation Chain".

Serving military health service officers may attend at the Surgeon General's invitation. Details may be obtained from Lieutenant JM Ball, 06 266-3985 or fax 06 266-3933.

31st International Congress on Military Medicine

The 31st International Congress on Military Medicine will be held in Beijing in October 1996. The main topics to be discussed at the Congress are:-

- Wounds by new weapons and their prevention and treatment.
- HIV infection and AIDS from a military point of view.

- Application of traditional medicine in the military environment.
- Prophylaxis and treatment in military training and sports injuries.

Further details of the Congress can be obtained from Lieutenant JM Ball, 06 266-3985 or fax 06 266-3933.

Historic Stamp Cover

A strictly limited number of historic stamp covers produced for the AMMA's Third Annual Conference are still available. These covers feature the 1991 Australia Day set of the Australian National Flag, White Ensign, RAAF Ensign and the Red Ensign. Only 100 of these were produced, they are individually numbered, and sell for the bargain basement price of \$10. These will definitely be a collector's item, particularly after the Republic and new flag!! For details, contact Nader Abou-Seif on 03 749 6777.



The Australian Military Medicine Association

Notice of
4th Annual General Meeting
to be held at
0800 Saturday 2 September 1995.
At the Ballroom, Manly Pacific Parkroyal Hotel,
Sydney

AGENDA

1. Minutes of 3rd Annual General Meeting
2. President's Address
3. Secretary's Report
4. Treasurer's Report
5. Fees for 1996.
6. Association Council for 1996.
7. Conference 1996.
8. Other matters addressed to the Secretary prior to the Meeting

NOTIFICATION

ALL MEMBERSHIPS FELL DUE FOR RENEWAL IN DECEMBER 1994.

To retain current membership, please complete the form below and return it with a cheque for \$30.00 to:

Dr M.W. Skinner
Secretary
AMMA
PO Box 373
MOONAH TAS 7009

ARE YOU STILL FINANCIAL?

RENEWAL OF MEMBERSHIP

Rank/Title: _____ Name: _____

Address: _____

State: _____ Postcode: _____ Phone No: _____

Please find enclosed a cheque for \$30.00 being payment of membership fees up to and including 31 December 1995.

NOTIFICATION OF CHANGE OF ADDRESS

Rank/Title: _____ Name: _____

New Address: _____

State: _____ Postcode: _____ Phone No: _____

Previous
Address: _____

State: _____ Postcode: _____ Phone No: _____

AUSTRALIAN MILITARY MEDICINE ASSOCIATION

Application for Membership

I wish to become a full/student/associate member of the Australian Military Medicine Association. I submit the following details so that accurate membership records and academic status of the organisation be maintained.

Name			
(Title/Rank)	Surname	Given Names	
Date of Birth	____ / ____ / ____		
Business Address		Suburb	
	State	Postcode	Country
Business Telephone		Home Telephone	
Postal Address		Suburb	
	State	Postcode	Country
Primary Qualifications			
University		Year	
Qualifications to be obtained and year anticipated for completion (student membership only).			
Other Qualifications			
How long have you been interested in Military Medicine?			
What is your experience in Military Medicine (list publications if any)?			

Currently serving in a Defence Force? Yes/No (please circle as appropriate)			
If yes, Permanent / Reserve / Navy / Army / Air Force			
If yes, which country?			

Signed: _____ Date: ____ / ____ / ____

Please return this form with a cheque in Australian dollars made out to AMMA for:-

\$80 full Members (\$50 joining/\$30 annual)
\$30 Student/Associate (\$20 joining/ \$10 annual)
To: Dr M. Skinner, Secretary, AMMA, PO Box 373, Moonah, TAS 7009 Australia