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SANCTIONED USE OF DRUGS IN COMBAT

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INTRODUCTION

Since World War I the appropriate use of the principles of forward treatment has resulted in the return of 60 to 90% of combat stress casualties back to their units. Modern high-technology, sustained, and possibly nuclear warfare raises serious barriers to the practice of these principles which require rest from combat in a safe place near the battle fronts followed by return of the soldier to his own small (squad or platoon sized) unit. Great mobility and dispersion of forces will impede return of the soldier to his unit and technology capable of identifying any agglomeration of soldiers due to an infra-red "signature" will interfere with application of forward treatment. Prevention of psychiatric casualties through strengthening cohesion appears to have definite limits as seen in Israeli psychiatric casualties of 23 per 100 wounded-in-action casualties in the 1982 Lebanon War despite thorough preventive efforts (Belenky, Jones 1983).

The widespread use of alcohol and other drugs in numerous wars over the centuries suggests that they may have some efficacy despite the usual assumption that they are detrimental. The possibility of using drugs to prevent and treat psychiatric casualties would appear to deserve a new look based not only on their historical combat usage but also based on recent advances in understanding their modes of action which may allow their tailoring for specific combat use. Drugs may also have a role to play in enhancing performance in combat.

PERFORMANCE ENHANCEMENT

Undoubtedly alcohol was the first drug to be utilized to enhance combat performance. When Holland became a major source of gin, the widespread use of this alcoholic beverage by soldiers led to the expression "Dutch courage" to express the desired effect. Other drugs studied or used to enhance combat performance include ergot alkaloids, cannabis, amphetamine and other stimulants, dramamine and other antihistamines, benzodiazepines and L-tryptophan. Probably the most extensive modern use of performance enhancing drugs occurred among Soviet personel during WW II shortly after amphetamine was synthesized. Amphetamine was reportly useful not only to stave off fatigue and drowsiness but also to improve memory and concentration, particularly among Soviet pilots (Roberts 1980).

During the US-Vietnam Conflict methylphenidate (Ritalin) and sometimes dextroamphetamine were standard issue drugs carried by Long Range Reconnaisance Patrol (LRRP) soldiers (Jones 1966). The LRRP's found the most efficacious use to be upon completion of a mission when fatigue had developed and rapid return to the base camp was desirable. Other than mild rebound depression and fatigue after the drug was discontinued, no adverse effects were reported. Other psychiatrists (Holloway 1982) studying the drug abuse problem later in the Vietnam Conflict reported problems with abuse of these stimulants as well as the morphine syrettes carried by soldiers causing them to be withdrawn from the soldiers.

Sedatives have also been studied as a method to improve performance in anxiety-producing situations such as paratroopers making low altitude jumps or for reducing the emotional tension of young soldiers during the firing of guns (Roberts 1980). Reports of improved target accuracy through use of the beta-adrenergic blocker, propranolol, and diazepam (Valium) have resulted in a US Army ban on use of these drugs by soldiers engaged in marksmanship competition since they would confer an unfair advantage (Jones 1981).

In the US-Vietnam War neuroleptics were widely utilized for psychotropic effects but benzodiazepines were also used. In the 1982 Falklands War temazepam was utilized by pilots to ensure adequate sleep despite the time-zone changes for British forces (Nicholson 1983). Recent benzodiazepine receptor research suggests that these drugs may have particular value in combat.

BENZODIAZEPINE RECEPTOR STUDIES

In their own studies and review of benzodiazepine (BDZ)

receptor studies Skolnick and Paul (1981) and Skolnick, Mendelson and Paul (1981) discriminated four functions mediated by benzodiazepines, anti-anxiety (anxiolytic), anti-convulsant, muscle-relaxant, and sedative-hypnotic functions. A fifth possible effect of diazepam in blocking panic is relatively weak and of drugs available on the US Market, a number of primarily anti-depressant medication (e.g. tricyclics, mono-amine oxidase inhibitors) appear to have greater anti-panic effects (Campbell, Shapiro 1977). It is believed that BDZ's exert their effects by potentiating the inhibitory effects of gamma-aminobutyric acid (GABA), which in turn is the neurotransmitter of 30% of the inhibitory synapses of the brain (Paul 1982). A careful modification of the molecular structures involved has resulted in the synthesis of experimental drugs which can act as agonists or antagonists of all four of the functions mediated by BDZ. This selectivity suggests numerous clinical and military applications including both the prevention and treatment of combat stress disorders and enhancement of performance in certain circumstances.

COMBAT CHEMOTHERAPY AND CHEMOPROPHYLAXIS

The most consistent symptom of combat stress whether occurring early in exposure to combat or after cumulative exposure is anxiety. In the past, drug treatment of this anxiety with sedatives ranging from chloral hydrate and bromides in WW I to barbiturates in WW II and even self-prescribed alcohol, cannabis and heroin in Vietnam has often not only produced unwanted sedation and decreased neuromuscular and mental efficiency but has resulted in a decreased probability of return to combat due to the fixation of a sickness role suggested by taking medication. The Israeli experience in 1973 was such that a policy prohibiting forward use of medications and even hypnosis resulted (Noy 1981).

A drug, however, which would selectively reduce anxiety without diminishing mental or physical alertness and efficiency would go a long way toward "curing" the battle fatigue syndrome. To some extent this occurred in the Vietnam Conflict when physicians treated psychophysiological symptoms of fear and anxiety with neuroleptics and anxiolytics (Datel and Johnson 1981). In Johnson's one-month, mid-1967 survey, physicians' experience, when generalized to the entire troop population, gave an estimated prescribing rate of 12.5 per cent per year of the assigned Army troops. Compazine accounted for 45% of prescriptions made by non-psychiatrists, mainly used to treat gastroenteritis. Most of the 56 cases of battle fatigue were treated with major tranquilizers (64%), particularly chlorpromazine. The neuromuscular impairments produced by this drug make it a particularly questionable choice on the battle field.

THE FUTURE

The ideal drug to treat or prevent combat stress breakdown would be an easily administered, stable compound which would prevent development of or remove anxiety without significant neuromuscular or cognitive impairments, would be non-addictive and would permit an appropriate response to danger. Sucha drug is not currently available in the US market but drugs selectively affecting BDZ receptor functions raise the possibility of developing such a drug.

Other drugs for selected purposes may also be developed. A drug with a short duration of effect reversible by an antagonist could prove to be amost useful battlefield hypnotic. Such drugs are already in the experimental stage (Paul 1982).

The ideal currently available stimulant drug for performance enhancement may be caffeine since it has minimal tendency to distort perception or produce rebound depression and fatigue; however, its enhancement effects are also relatively weak. Other contenders might be L-phenylalanine or L-tyrosine. Unlike other stimulants which deplete neurons and neurohumoral glands of stored adrenaline and noradrenaline, these amino acid precursors of these neurohumors and neurotransmitters, actually replenish them. Long term use of phenylalanine or tyrosine could cause hypertensive problem for some. Cocoa leaves containing the stimulant cocaine plus phenylalanine have been used by Andean Indians for centuries; however, since it is an illegal material, it is unlikely to be available for combat experimentation. The ideal currently available anti-anxiety drug may be buspirone. Studies by Mattila, Aranko and Seppala (1982) in Helsinki and by Moskowitz and Smiley (1982) in Los Angeles reveal buspirone to relieve anxiety without producing cognitive impairment both in acute and chronic use and even in the presence of alcohol. In fact buspirone actually appeared to improve psychomotor skills in alcohol users.

Buspirone is not yet marketed in the USA; however, the Clinical Director of Research for Bristol Myers Pharmaceuticals, Newton (1983), reports that seven clinical studies involving over 200 persons have shown no psychomotor impairment, no muscle relaxant or sedation effects greater than placedo. Vigilance tasks are improved by a slight alerting effect. Addiction potential seems low becuase ther is no euphoric effect and a single large dose (40 mg or above) produces a dysphoria. Patients have been given daily doses of over 2 grams. One possible drawback is that, part of its antianxiety effect, it also decreases anger and hostility.

In summary, for millenia soldiers have utilized alcohol and other drugs to enhance combat performance and relieve the stresses of war. The time may now be opportune for the use of specifically tailored drugs to be used for these purposes without risking the dangers or decrements experienced in the past.

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