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Editorial

Viral hepatitis in India: Armed Forces perspective

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Introduction

Viral hepatitis contributes significantly to worldwide morbidity and mortality. World Hepatitis Day is observed on 28th July of every year with a primary focus of raising awareness of the disease. This date had been chosen in honour of the Nobel Laureate Baruch Samuel Blumberg, discoverer of the hepatitis B virus, who was born on this date. World Hepatitis Day was given global endorsement by the World Health Assembly in 2010 with the resolution that “28 July shall be designated as World Hepatitis Day in order to provide an opportunity for education and greater understanding of viral hepatitis as a global public health problem, and to stimulate the strengthening of preventive and control measures of this disease in Member States.” World Hepatitis Day is now recognized in over 100 countries. The efforts which are carried out to raise awareness include events such as free screenings, poster campaigns, demonstrations, concerts, talk shows, flash mobs and vaccination drives.

The current issue of MJAfi coincides with the month of the World Hepatitis day and appropriately this issue has a befitting article on the Indian scenario of viral hepatitis co-authored by one of the leading hepatologists of the country.¹ It would be an opportune time to review the status of viral hepatitis in the Armed Forces and evaluate the responses which are required.

Persons serving in the Indian Armed Forces are a unique population comprising predominantly of young persons drawn from all parts of India across different socioeconomic strata. Data from the Armed Forces on hepatitis, as for many other diseases, are possibly a true reflection of the spectrum of illness at national level. However, it must be kept in mind that

certain peculiar service conditions can affect the overall prevalence of illnesses amongst persons serving in the Armed Forces.

Soldiers in the Armed Forces have to serve in areas of armed strife at the borders or outside their homelands in operations and wars as a part of the united peacekeeping operations. Injuries, hospitalizations and transfusions in remote areas expose them to parenterally transmitted infections. Besides, they often operate in difficult terrains where hygienic conditions, control on food sources and supply of safe drinking water may be suboptimal. Although there is a significant thrust on preventive measures in the Indian Armed Forces, during rapid deployment or in conflict, toilet facilities and faecal disposal may be constrained and it may not be feasible to maintain optimal levels of sanitation and hygiene. Along with these factors, crowded conditions, especially in regimental training centres, also contribute to the increase in the likelihood of feco-orally transmitted diseases. Hence, spread of both parenterally and feco-orally transmitted hepatitis is a reason for concern in personnel serving in the Armed Forces.

Feco-orally transmitted hepatotropic virus infections in the Indian Armed Forces

Hepatitis A

Hepatitis A virus (HAV) and hepatitis E virus (HEV) infections are feco-orally transmitted and can cause acute hepatitis which can lead to loss of man days in sporadic settings and outbreaks or epidemics can affect the fighting efficiency of the troops.

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HAV infection in children is often sub-clinical or self-limiting while in adults, it can cause significant morbidity. The role of universal HAV immunization has been debated for children in India as well as that for the young recruits joining the Armed Forces. A study conducted on school children in Delhi had found that all children above the age of 16 years had antibodies against HAV and this study recommended that mass vaccination is not required in North India.² As there has been improved socioeconomic status, education and sanitation in India, HAV seropositivity is likely to decrease. A study carried out in Delhi showed a seroprevalence of HAV to be 57% in individuals less than 35 years and 92% in more than 35 years.³ Studies carried out in Delhi showed a relatively lower seroprevalence of HAV (62.6%) among young population group.⁴ Studies in other parts of India have, however, shown a seroprevalence of HAV of around 90%.⁵⁻⁷ A large multicentric cross-sectional study conducted in 2010-2011 among healthy young adults of 11 training centres of the Indian Armed Forces found the seroprevalence of HAV and HEV in the Indian Armed Forces to be 92.68% and 17.05% respectively.⁸ These findings have implications for the value of recommendation of universal immunization for personnel of the Indian Armed Forces. Since a majority of the healthy young soldiers have pre-existing immunity to HAV, it is difficult to justify the economic burden of universal HAV vaccination. Contrary to the high level of immunity against HAV shown by Kotwal et al.,⁸ HAV was found to be a cause of acute viral hepatitis in 30% of 102 cases seen in an Armed Forces hospital from southern India.⁹ This study suggests that young recruits joining the Indian Armed Forces may be at risk and that the debate of universal immunization of recruits joining the Armed Forces may be far from over.

Hepatitis E

HEV has been found to be the commonest cause of sporadic acute viral hepatitis in India.¹⁰⁻¹² Data from Armed Forces also showed that HEV accounted for 45.5% cases of acute sporadic viral hepatitis.⁹ Epidemics of acute viral hepatitis due to HEV have been reported from regimental training centres of the Indian Armed Forces with an attack rates of 1.44-8.14%. Person to person HEV transmission is less efficient than HAV, as indicated by low secondary attack rates and no cases occurred after the sewage-water contamination was eliminated.^{13,14} Epidemiological investigations showed these to be due to sewage contamination of old and corroded water pipelines passing close to old leaking sewage lines. These findings should make us reflect on the fact that many military cantonments have buildings of the British era. Replacement of these vintage water distribution and sewage systems should be advocated in a phased manner.¹⁴

Parenterally transmitted hepatotropic virus infections in the Indian Armed Forces

Hepatitis B

In patients with acute viral hepatitis, hepatitis B surface antigen (HBsAg) positivity has been reported to be 12.5% from

the Armed Forces.⁹ India has an HBV carrier rate of approximately 3%.¹⁵ As regards the Armed Forces, a multi-centric cross-sectional survey of more than 22,000 recruits from 25 training centres scattered throughout the country found a prevalence rate of 0.93% amongst healthy young males.¹⁶ Similarly, a community based cross sectional study in 2011 also found the overall seroprevalence of HBV infection among population of the Indian Armed Forces to be 1.25%.¹⁷ Screening of blood donors from Kolkata has also similarly shown HBsAg seropositivity of 0.99%.¹⁸ One community-based study, however, found a seroprevalence rate of 7.9%.¹⁹ While these data were surprisingly high, the sample size was relatively smaller ($n = 1506$) and it included personnel serving in the Army Medical Corps. Moreover, this study with an unusually high HBV prevalence was undertaken between 1997 and 1999. There has subsequently been a significant and impressive reduction seen in HBV seroprevalence rate in blood donors from 2.39% in 2000 to 1.28% in 2009.²⁰ A similar decline of HBsAg prevalence in voluntary donors from 2000 to 2004 was noted by other workers.²¹ Other factors which could have affected seroprevalence include deployment of troops in conflict zone and ethnicity of the troops. An overall high prevalence of HBV, hepatitis C virus (HCV) and human immunodeficiency virus (HIV) has been found in recruits from the northeastern states.¹⁶

In India, the prevalence of HBV infection in HIV-infected persons has reported between 2.25 and 29.7%.¹⁵ Sen et al.²² reported HBV co-infection rates of 7% (including 2% occult HBV) in a pilot study of 100 HIV-infected patients. In a larger cohort of HIV-infected individuals from the Armed Forces ($n = 320$), HBV co-infection rates of 12% have been found with a solitary case of occult HBV (unpublished data).

Hepatitis C

The prevalence of HCV infection in India is estimated at between 0.5% and 1.5%.²³ In the large multi-centric cross-sectional survey of more than 22,000 recruits, the prevalence rate of HCV was found to be 0.44%.¹⁶ As compared to HBV, a higher number of HCV was found among recruits from the northeast.¹⁶

Self-exclusion for recruitment as military trainees might be a reason why these figures are slightly lower than that of the general population. However, blood bank data from the Armed Forces also shows that the HCV prevalence is less than 0.5% in blood donors.^{18,21} The prevalence of HCV co-infection in HIV-infected patients in the Armed Forces is around 8% (Puri et al., in press).

In anti-HCV negative patients with end-stage renal disease, occult HCV infection has been reported in 56.25% patients in those on hemodialysis²⁴ and 42.2 in those who had received renal transplantation.²⁵

Viral hepatitis in the Armed Forces: implications and challenges

Considering the service conditions of the Armed Forces personnel, special emphasis is required to prevent feco-orally transmitted viral hepatitis. Provision of clean drinking water,

proper sewage disposal and health education in form of hand hygiene practices are of utmost importance. The sewage lines and waterpipes of vintage buildings/barracks where recruits or troops reside should be replaced in a phased manner to prevent epidemics of feco-orally transmitted viral hepatitis. While the last survey showed a high prevalence of immunity against HAV, such surveys need to be repeated at periodic intervals to reassess the need for universal vaccination of Armed Forces personnel.

While the parenterally transmitted hepatotropic viruses have a lower reported prevalence in Armed Forces personnel compared to national data, this still constitutes a large burden of disease in the Armed Forces. Almost one-fourth of patients are detected during donor screening for blood transfusion.²⁶ Meticulous follow-up of these patients and free therapy have resulted in reduction of the viraemic burden. Should we consider instituting a screening programme at the entry level for recruits from areas of high prevalence of HBV and HCV such as northeast, Punjab and the tribal populations? This will open a new debate on ethical issues.

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