

and offers no protection against the more ubiquitous common cold viruses. However, it is specifically influenza virus infection which can potentially lead to serious and occasionally lethal complications. On a slightly lighter note, one sometimes gets feedback from general practitioners complaining that administration of the vaccine reduces the number of winter GP consultations! Even general practitioners need to be reassured that they will still see their quota of non-influenza URTI patients, despite the vaccine.

Occupational health doctors are sometimes unconvinced of the cost benefit of annual vaccination of their workforce as some of the earlier literature claimed to demonstrate no cost savings. In more recent publications, however, rigorously controlled studies in very large populations such as health management organisations in the USA, have consistently demonstrated the cost benefit of annual immunisation of workers to reduce absenteeism. Naturally the benefits will be less so in those years with quiet influenza seasons. Unfortunately however, there are no tools to predict the severity of influenza in a future season.

Some people have expressed the opinion that it may be preferable to get the natural infection where the immunity is known to be more durable than that from the vaccine. In reality, influenza vaccine does not prevent infection with the virus as demonstrated by the fact that the repertoire and level of antibodies in those who are regularly vaccinated is no different from those who have never been vaccinated. What the vaccine does is to prevent the illness due to the virus.

When April or May comes about there is also a common feeling that the 'boat has been missed' and that

there is no longer any point in being vaccinated. Nothing could be further from the truth.

Influenza outbreaks in southern Africa usually commence in June and July, although the actual onsets are unpredictable. Immunity takes from 10 to 14 days to develop after vaccination and it is therefore preferable to vaccinate close to the winter season, so that antibody levels are still high when the annual outbreak starts. This should be balanced against vaccinating too late, and being unprepared for the outbreak, especially if this occurs early. It is however never too late to vaccinate, bearing in mind that it takes 10 to 14 days for a protective immune response to commence.

Lastly, practitioners are frequently faced with fit and tanned septuagenarians who stoutly maintain that they have never had flu or a cold in their lives and have no need for the influenza vaccine. However these are precisely the individuals who really need to be persuaded about their vulnerability to influenza complications and the efficacy and safety of influenza vaccines.

FURTHER READING

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INTERACTIONS BETWEEN HIV AND HEPATITIS B OR C

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HIV shares routes of transmission with the chronic hepatitis viruses B and C. All three can be transmitted by blood products or needle sharing in intravenous drug users. HIV and hepatitis B can also be transmitted sexually and vertically (hepatitis C is seldom transmitted by these routes). Therefore it is not surprising that co-infection with HIV and hepatitis B or C is common. Co-infection particularly affects hepatitis virus infections. There appears to be no effect of either hepatitis B or C on the natural history of HIV, but co-infection complicates the use of highly active antiretroviral therapy (HAART). Complications of chronic viral hepatitis have emerged as leading causes of morbidity and mortality in HIV-infected patients in regions where there is ready access to HAART. Medical therapy of chronic hepatitis B and C is complex and expensive, and should be undertaken only by specialists in the field.

Hepatitis B and HIV

It is estimated that there are 350 000 000 chronic carriers of hepatitis B worldwide. Sub-Saharan Africa and South East Asia are the two geographical areas most affected. These are also the areas with the highest HIV burden. In the USA the two main groups with significant HIV prevalence are intravenous drug users and men

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who have sex with men — these same groups have hepatitis B carrier rates 5 - 20 times higher than those in the general population. Therefore co-infection with HIV and hepatitis B is very common in all regions.

The main effect of co-infection is to increase the infectiousness of hepatitis B. Hepatitis B viral loads (a measure of viral replication) are higher in HIV-positive patients. In patients who are hepatitis B surface- and e-antigen positive (the main markers of infectiousness), the rate of development of antibodies to surface- and e-antigen (and hence loss of infectiousness) is low. Loss of e-antibody-positive status with the regression to e-antigen-positive status has even been documented in HIV infection.

Paradoxically, in HIV/hepatitis B co-infection there is less hepatic inflammation with lower elevations of transaminases, particularly in patients with lower CD4 lymphocyte counts. This is thought to be because hepatic inflammation is mediated by the immune system rather than a cytopathic effect of hepatitis B. It is unclear whether this lesser degree of hepatic inflammation will result in fewer cases of chronic liver disease caused by hepatitis B, as studies have shown contradictory results.

The initiation of HAART in patients with hepatitis B is associated with a high rate of hepatitis. This is thought to be due to the reconstitution of the immune system, with resulting increased hepatic inflammation. The problem is that this is very difficult to distinguish from hepatotoxicity of antiretroviral drugs. The development of IgM anticore antibody suggests a hepatitis B flare rather than a drug reaction, while

eosinophilia or a hypersensitivity rash suggests a drug reaction. It is prudent to avoid antiretroviral drugs with a high rate of hepatotoxicity (e.g. nevirapine) in patients with chronic hepatitis B infection.

Response rates to interferon alfa for hepatitis B are lower in HIV-infected patients, and therapy is not well tolerated. Nevertheless, interferon alfa can be used in selected patients as some patients will convert from e-antigen positive to e-antibody positive. Lamivudine, which is used to treat HIV, has useful activity against hepatitis B. Unfortunately hepatitis B resistance develops at the rate of about 20% per annum in HIV-negative patients and at higher rates in HIV-positive patients. The main role of lamivudine appears to be for patients with decompensated cirrhosis. However, lamivudine is nearly always used in either an initial or subsequent HAART regimen. If lamivudine is discontinued because of HIV virological failure, a flare of hepatitis can ensue. Therefore lamivudine use in co-infected patients should be monitored carefully by serial viral load measurements of both HIV and hepatitis B. It may be prudent not to use lamivudine in the initial regimen unless there is evidence of significant hepatitis B-induced liver disease.

Recently the nucleotide analogues tenofovir and adefovir have shown useful antihepatitis B activity, even when lamivudine resistance has developed. Trials of combination antiviral therapy for hepatitis B are being conducted. Tenofovir is registered for use in HIV infection in many developed countries, but not yet in South Africa.

Hepatitis B vaccination should be considered for HIV-infected patients who are not immune (i.e. antihepatitis B surface-antibody negative), but the response rates to vaccination are lower than in immunocompetent persons, particularly if the CD4+ T lymphocyte count is less than $200 \times 10^6/l$.

Hepatitis C and HIV

The prevalence of hepatitis C infection in intravenous drug users and haemophiliacs in the USA is 80% or higher. Hepatitis C and HIV share these important HIV transmission routes in developed countries. However, HIV/hepatitis C co-infection is uncommon in South Africa.

There is an increase in the hepatitis C viral loads in HIV-infected patients and progression to cirrhosis is faster in co-infected patients. The current therapy of choice in hepatitis C is interferon alfa (especially long-acting pegylated derivatives) combined with the antiviral drug ribavirin. Response rates appear to be reasonable in HIV-infected patients, but lower than in HIV-negative patients (especially if the CD4 lymphocyte count is low). As with hepatitis B, interferon therapy is not well tolerated by HIV-infected patients. Hepatotoxicity is also increased when HAART is used.

FURTHER READING

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