Global Update

News in Brief

New WHO recommendations for BCG and HIV

So far, the WHO recommended BCG vaccination for all newborns including those infected with HIV, if they were asymptomatic. In late November 2006, the WHO's Global Advisory Committee on Vaccine Safety reevaluated their data. The numbers suggest that the risk of tuberculosis in HIV infected neonates receiving BCG was to the tune of 400 per 100,000 vaccinated. This was almost half of the actual incidence of tuberculosis at that age. The new WHO policy states that babies born to HIV positive mothers should receive BCG whenever possible only after being tested and shown to be uninfected. This may delay the process by 6 weeks. Whether this will fuel a rise in tuberculosis in non HIV newborns needs to be seen (www.nature.com/news/2007, *Vaccine:*25;14-18,2006) .

The BCG vaccine : something old, something new

Nocard was the man who first isolated the mycobacterium bovis from a cow in 1902. He handed it over to 2 French scientists who were trying to develop a vaccine against tuberculosis. When they cultured it on a special medium they made an astonishing discovery that subculturing the bacterium weakened it. So in 1908 they began an experiment of subculturing the strain every two weeks. By 1919 they had weakened it so much that it could no longer infect even the guinea pig, which is considered the most susceptible creature to tuberculosis. It was ready for vaccine trials.

However over the years there has been growing disenchantment over the vaccine's erratic protection. Stewart Cole from the Pasteur Institute of Paris hypothesized that there could be genetic differences in the different strains used in the BCG vaccine which could account for the variation in performance. Cole and his colleagues studied the genomes of 10 strains of the BCG vaccine and published it in the *Proceedings of the National Academy of Sciences of the USA*, 2007. They found there was marked differences in both genomes and gene expression. For example BCG Pasteur lacked 13 genes which could be found in the original strain. Using their data they have made a family tree of the various BCG strains. They propose that genetically older strains like BCG Japan will have more genetic material and hence antigens and could give better protection than the newer strains.

The reason for the variation in genomic constitution is interesting. 100 years ago, scientists had no way of preserving the strains by freeze drying. So they grew them on potato slices coated with glycerol. This different ecology had different environmental pressures and hence many unwanted genes were dropped or their expression was reduced.

So, Cole strongly supports the use of BCG Japan whenever possible, both for vaccination and development of new vaccine. However other immunologists are skeptical whether mere strain differences could account for the differing protection rates.

The WHO has set a goal for a new tuberculosis vaccine by 2015. Of the dozen candidate vaccines, Wellcome Trust's MVA85 is furthest ahead. It is undergoing field trials and could reach our clinics by 2012. One of the techniques is the prime boost strategy in which the antigen is introduced twice. Once, as BCG or improved BCG followed by another method. The Aeras candidate vaccine M72 has 2 tubercular proteins fused together given with an adjuvant which boosts cellular immunity. All in all, work is on at a frenetic pace to get the new vaccine against tuberculosis (www.nature.com/news/2007).

Gouri Rao Passi,
Consultant, Department of Pediatrics,
Choithram Hospital & Research Center,
Indore, Madhya Pradesh, India.
E-mail: gouripassi@hotmail.com