

Overseas briefs

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Vaccine protects monkeys from Ebola virus infection

Contributed by C Griot. Source: BBC on-line, 29 November 2000 (edited)

Researchers have produced a vaccine that will protect monkeys from Ebola virus infection. Dr Gary Nabel, Director of the Dale and Betty Bumpers Vaccine Research Center (VRC) at the US National Institutes of Health claims that studies show animals can launch an effective immune response against Ebola virus. The new vaccine was tested at a high-containment facility run by the US Centers for Disease Control and Prevention. The researchers, who report their work in the journal 'Nature,' exposed eight macaques to a lethal dose of Ebola virus. Only the four animals given the new vaccine survived.

The vaccine worked on two levels. First, the monkeys were given injections of DNA that produced in their systems certain proteins found on the surface of the virus. These were sufficient to stimulate an immune response but did not make the animals ill. The response was then boosted by exposing the macaques to an adenovirus vector that had been re-engineered to express another specific component of the virus. This further increased the production of antibodies and T cells in the animals to fight infection. More than 6 months after being exposed to Ebola virus, the monkeys in the study remained symptom-free with no detectable virus in their blood.

The multivalent vaccine is to be tested for effectiveness against all three strains of Ebola virus. Dennis Burton and Paul Parren (of the Scripps Research Institute at La Jolla, California) commented in Nature that there was still some way to go before a human vaccine became available; in the meantime the more urgent requirement was to channel resources into surveillance, hygiene and training in barrier nursing, which can be highly effective in containing an outbreak.

Moderators comment. In this paper (Sullivan NJ, Sanchez A, Rollin PE, Yang Z-y, Nabel GJ. Development of a preventive vaccine for Ebola virus infection in primates. *Nature* 2000;408:605-609) the authors describe an effective vaccine strategy for Ebola virus infection in non-human primates that involves a combination of DNA immunisation and boosting with adenoviral vectors that encode viral proteins generated cellular and humoral immunity in cynomolgus macaques. Challenge with a lethal dose of the highly pathogenic, wild-type, 1976 Mayinga strain of Zaire Ebola virus resulted in uniform infection in controls, who progressed to a moribund state and death in less than one week. In contrast, all vaccinated animals were asymptomatic for more than 6 months, with no detectable virus after

the initial challenge. The authors conclude that these findings demonstrate that it is possible to develop a preventive vaccine against Ebola virus infection in primates. The Zaire Ebola virus was chosen because it exhibits the highest lethality of known Ebolaviruses. This is a very significant result, although the practicality of such an immunisation strategy in rural Africa must be open to question.

France acts on BSE

Source: The Times (London), 15 Nov 2000 (edited)

French Prime Minister Lionel Jospin has announced a ban on T-bone steaks and a moratorium on the use of animal products in livestock feed. The measures are intended to calm public fears in France over the rising cases of BSE. Other measures announced include random tests on cattle entering slaughterhouses and more funds for research into BSE.

French restrictions in force since 1990 ban the use of meat and bone meal in cattle feed, but the new temporary ban will apply to all livestock fodder. The new ban has been prompted by fears that feeds containing cattle products have been accidentally or deliberately fed to cattle, despite the existing ban. The ban on T-bone steaks is intended to eliminate from the food chain the vertebrae of cattle. Butchers will also be ordered to provide a new cut of cote de boeuf, a traditional French dish.

Last week Agriculture Minister Jean Glavany rejected a proposal by farmers to slaughter millions of cattle in an attempt to wipe out the disease. Mr Glavany said it would be too costly and would only create more 'psychosis' among consumers.

BSE in Spain

Contributed by Jack Woodall. Source: BBC TV, 22 November 2000

On 21 November 2000 Spain reported its first cases of BSE in two cows originally imported from Austria and the Netherlands, respectively. Austria has never reported a case of BSE; the Netherlands has reported only five. The finding is due to upgrading of inspection procedures in Spain in preparation for a Europe-wide inspection program to be introduced on 1 January 2001.

First case of BSE in Germany

Contributed by Stefan Brockmann Source: Associated Press, 25 November 2000 [edited]

After a meeting of the 'bund-laender BSE crisis commission', the German Ministry of Agriculture issued a statement on 25 November 2000 that feeding of animals on bone meal will be illegal in Germany, beginning 29 November 2000.

This statement was made after the first case of BSE in Germany was confirmed by the national reference centre in Tuebingen. The Government of the State of Schleswig

Holstein, where the suspected cow was stabled, has arranged a BSE hotline.

The first suspected case of vCJD, a 22 year old male Bavarian patient, suffering from progression of the disease for 18 months, was also reported by the press. However, the head of the Division of Neuropathology at the Munich 'Klinikum GroDFhadern', could not confirm or deny vCJD or the sporadic form of the disease.

BSE in Germany

From: H. Larry Penning, MD Source: Reuters, 27 November 2000 (edited)

German authorities said a backup test confirmed the country's first case of BSE. Heide Simonis, state premier of the northern region of Schleswig-Holstein, said a second test by federal health authorities confirmed the results of an earlier test on Friday.

The German government, which initially resisted strict measures, reversed itself and called for tests on cattle throughout the European Union (EU).

The Agriculture Minister has demanded fast national testing of slaughtered cattle and urged mandatory testing throughout the EU and on beef imported into the EU.

State and federal ministers also agreed at a meeting in Bonn to back Schroeder's call for an immediate ban on the import, export and use of animal feeds containing meat and bonemeal.

The measure will become law on 29 November 2000, and Germany will push for an EU-wide ban in December. Infected feeds have been blamed for the spread of BSE and the human form of mad cow disease, variant Creutzfeldt-Jakob Disease (vCJD).

Mosquito diseases could reach epidemic levels

Contributed by Environmental Health News. Source: Australian Associated Press. 21 November 2000 (edited)

The New South Wales Health Minister Craig Knowles warned that mosquito-borne diseases could reach epidemic levels in NSW because of the floodwaters that had inundated a third of the State. Potentially the biggest breeding ground for mosquitoes in years has resulted from a combination heavy rain and humid weather.

Mr Knowles said outbreaks of diseases such as Ross River Fever and Barmah Forest Disease usually occur from February to March but the dramatic increase in the number of mosquitoes was likely to bring these outbreaks forward. People are also being warned to beware the rarer and deadly Murray River Encephalitis. All three diseases are characterised by nausea, vomiting, diarrhoea and fever, as well as stiffness in the neck and upper back. People are advised to use strong insect repellents and mosquito nets and to cover up with clothing. They are also advised to clean out house gutters, to keep pools chlorinated, salted or empty, and to remove other sources of water lying around in which mosquitoes can breed.

Up to the end of July, 624 cases of Ross River and Barmah Forest Disease have been reported to NSW Health - a third of those coming from the Hunter, New England and areas of the mid-north coast. The reports come mostly from the mid-winter months when mosquito activity is usually at its lowest.

Update on cholera outbreak on Pohnpei

Contributed by J P Chaine, PIHOA Regional Epidemiologist (edited)

As of December 3, the total number of cases of Cholera on Pohnpei is 3,429. This is broken down to: 1,814 cases from OPD/ER that were treated and sent home, 792 cases admitted to Pohnpei hospital, 782 seen in the outlying dispensaries, and 41 seen at the two private clinics. Nineteen deaths have been reported but this may be under-reported because of the stigma attached to cholera. In the period 27 November to 3 December all units saw only 11 cases. The hospital has not had an admission since November 19. All cases of cholera are from the main island of Pohnpei; there has been no exportation to neighbouring islands.

The oral cholera vaccination campaign reached about 15,000 people on Pohnpei proper (a 50% coverage). The vaccine is still available, but demand is mostly from travellers going to Chuuk and Kosrae.

Kosrae received 7,000 doses of vaccine and requested another 500 doses on 1 December. This will bring their coverage into the high 90's per cent.

Chuuk has vaccine on the island and the authorities are currently planning their campaign. The main island of Weno and the lagoon islands are their first priority.

Poliomyelitis - Dominican Republic & Haiti: alert

Contributed by Epstein, Mr. Daniel B. (WDC) Source: Pan American Health Organization, Regional Office for the Americas

A current outbreak of poliomyelitis in the Dominican Republic and Haiti has raised serious concerns because the Western Hemisphere has been free of wild poliovirus circulation since 1991, and because the virus identified is an unusual derivative of the Sabin type 1 oral poliovirus vaccine (OPV), according to Dr Ciro de Quadros, who directs the Pan American Health Organization's Division of Vaccines and Immunization.

The Ministries of Health of the Dominican Republic and Haiti, with the assistance of the Pan American Health Organization (PAHO) and the Centers for Disease Control and Prevention (CDC), are investigating the outbreak to determine the extent of spread and to evaluate the reasons for the outbreak. Aggressive control measures have already been put in place. A mass vaccination campaign with OPV has already started in the Dominican Republic, initially covering the three provinces with suspected cases, followed shortly by the rest of the country. In Haiti, three nationwide vaccination rounds with OPV are planned for January, February and March 2001. Since 12 July 2000, a total of three laboratory-confirmed cases due to (vaccine-)derived

poliovirus type 1 isolates have been identified. An additional 16 persons with acute flaccid paralysis (AFP) are now under investigation in the Dominican Republic. To date in Haiti, a single laboratory-confirmed case due to the (vaccine-) derived type 1 virus has been reported, with paralysis onset on 30 August 2000. After intensive case-finding activities, no other cases have been found so far. The virus detected, first isolated by the PAHO Poliovirus Laboratory at the Caribbean Epidemiology Center and subsequently characterized at the Poliovirus Laboratory CDC, is unusual because it is derived from OPV, has 97 per cent genetic similarity to the parental OPV strain, and appears to have assumed the characteristics of wild poliovirus type 1, both in terms of neurovirulence and transmissibility. The difference in nucleotide sequence suggests the virus has been either replicating for a prolonged period in an immunodeficient individual, or circulating for as long as 2 years in an area where vaccination coverage is very low, resulting in ongoing genetic changes in the original Sabin virus that gave it the properties of wild poliovirus.

Prolonged circulation of OPV-derived polioviruses in areas with very low OPV coverage has been documented in only one other setting — type 2 OPV-derived virus circulated in Egypt for an estimated 10 years (1983-1993) and was associated with more than 30 reported cases. In this instance, vaccination coverage was very low in the affected areas, and circulation of a vaccine-derived poliovirus was terminated rapidly once OPV vaccination coverage

increased. The key factor for control of circulating OPV-derived viruses is the same as that required to control wild poliovirus circulation: achieving and maintaining high vaccination coverage. Dr de Quadros said that: 'No evidence for circulation of OPV-derived virus has ever been found in any area with high coverage. The current outbreak is a powerful reminder that even polio-free areas need to maintain high coverage with polio vaccine until polio eradication has been achieved. Nearly 4 decades of experience with OPV has shown that it is very safe and effective in preventing poliomyelitis. OPV is the vaccine of choice for the eradication of wild polioviruses. However, it is crucial to maintain high OPV coverage to protect against imported wild polioviruses and to prevent person-to-person transmission of OPV-derived viruses.' He added that: 'It is also important that all countries maintain high quality AFP and poliovirus surveillance, that current activities to complete the global eradication of wild polioviruses be accelerated, and that a global strategy is developed for the orderly cessation of immunisation with OPV after global certification of polio eradication is achieved.'

Travelers to the Dominican Republic and Haiti who are not adequately immunised must be considered at risk of acquiring poliomyelitis, and should make certain they are fully immunised against poliomyelitis. Those countries using OPV for routine immunisation recommend at least a 3-dose primary vaccination series.

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This journal is indexed by *Index Medicus* and Medline.

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