

Overseas briefs

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Hepatitis B infection in Scottish hospital

Source: The Guardian Online, 24 August 2001 (edited)

Health officials are trying to trace 350 hospital patients following the death of a 79-year-old man who caught hepatitis B from a surgeon at Queen Margaret Hospital in Dunfermline, Fife. A hospital surgeon was identified as the source of the infection. A second patient also contracted the disease from the doctor and is recovering. There were calls for hospital infection control strategies to be urgently reviewed after it emerged that the surgeon, with 27 years experience, had been immunised against hepatitis B and had undergone tests that indicated that the immunisation had worked.

Preliminary DNA testing suggest all 3 (isolates) of the virus are extremely similar and given that the surgeon was involved in both the patients' operations within the right time period for the incubation of the virus, both patients may have caught the hepatitis B virus from the surgeon. The 79-year-old patient contracted the virus last autumn after a gall bladder operation and died in February 2001.

This incident is unusual in that the surgeon had followed all the currently recommended safety procedures and was permitted to operate, yet remained infectious. A larger incident of the same kind occurred in another European country, where a surgeon who had been repeatedly vaccinated against hepatitis B but never showed seroconversion turned out to be a carrier. A retrospective survey showed that at least 28 patients (out of nearly 2,000) operated on by this surgeon over several years had contracted hepatitis B and 11 were shown to be the same strain as the surgeon's.

Hepatitis B in Guangdong Province, China

Source Philadelphia Inquirer, Associated Press report, 23 August 2001 (edited)

Shanghai: The use of dirty needles in injections and acupuncture has helped give the southern province of Guangdong one of the highest rates of hepatitis B infection in the world. Blood samples taken from patients during hospital visits show that 10 million people — 75 per cent of the province's population — have had the potentially lethal disease. Early surveys indicated that two thirds of China's 1.26 billion people had been infected, compared with about one in 20 Americans.

About 60 per cent of those who have had the disease caught it during childhood, usually during routine vaccinations. Mothers may also infect their children during birth or while breastfeeding. Most of those infected with hepatitis B survive. But in some cases, the virus continues to attack the

liver, causing cirrhosis and cancer. These diseases kill about 300,000 people in China each year, about 80 per cent of whom had hepatitis B.

Experts also blame an illegal trade in needles that have been inadequately cleaned and repackaged. They also say that there are increasing reports of infection from acupuncture, a traditional Chinese remedy in which dozens of needles may be stuck into the skin. Effective vaccinations against hepatitis B exist and are now required for children in the United States. But at \$US25, they are too expensive for most Chinese and are not covered by national health insurance.

Poliomyelitis — Dominican Republic — visitor advice

Source: MMWR 50(39);855-6. Public Health Dispatch: 5 October 2001 (edited)

From 12 July 2000 to 18 September 2001, a total of 21 cases of poliomyelitis (including 2 fatal cases) were reported from the Caribbean island of Hispaniola, divided between Haiti and the Dominican Republic. In the Dominican Republic, 13 of 168 reported cases of acute flaccid paralysis (AFP) were confirmed as polio by isolation of poliovirus type 1 from either patients or their healthy contacts. The median age of the patients was 3 years (range: 9 months 14 years). None were vaccinated adequately. The most recent confirmed case-patient in the Dominican Republic had paralysis onset on 25 January 2001.

In Haiti, 8 of 40 AFP cases were confirmed virologically; seven of the confirmed cases occurred during January to July 2001. The median age of the patients was 7 years (range: 2–12 years). One patient had received at least 3 doses of oral poliovirus vaccine (OPV). The most recent confirmed case occurred in Haiti and the patient had paralysis onset on 12 July 2001. Currently 18 AFP cases from the Dominican Republic and three from Haiti are pending final classification.

This outbreak was the first in the Americas since 1991 and was associated with the circulation of a type 1 OPV-derived virus, having substitutions affecting 1.8 per cent to 4.1 per cent of nucleotides encoding the major capsid protein (VP1). The circulating vaccine-derived poliovirus associated with the outbreak recovered the capacity to cause paralytic disease and widespread person-to-person transmission and was biologically indistinguishable from type 1 wild poliovirus. Contemporary vaccine-derived poliovirus isolates from persons with AFP in other countries of the Americas are more closely related (>99.5% VP1 sequence similarity) to the respective OPV strains, are unrelated to the Hispaniola outbreak viruses, and show no evidence of extensive person-to-person transmission. The outbreak in Hispaniola occurred in areas of very low OPV coverage.

In response to the outbreak, health authorities in both countries conducted house-to-house vaccination with OPV. In December 2000, and February and April 2001, 3 rounds of mass vaccination campaigns were conducted in the Dominican Republic. In each round, approximately 1.2 million OPV doses were administered to an estimated

population of 1.1 million children aged <5 years. Haiti conducted 2 rounds of mass vaccination in February and March 2001.

References

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CDC. Outbreak of poliomyelitis-Dominican Republic and Haiti, 2000-2001. *MMWR* 2001;50:1478.

CDC. Poliomyelitis prevention in the United States: updated recommendations of the Advisory Committee on Immunisation Practices (ACIP). *MMWR* 2000;49 (no.RR-5).

Imported poliomyelitis, Bulgaria

Source: *Eurosurveillance Weekly, Issue 45, 8 November 2001 (edited)*

In May this year, *Eurosurveillance Weekly* reported on the occurrence of 2 cases of poliomyelitis in Bulgaria.¹ The patients — 2 children of Romany origin — were infected with a wild poliovirus closely related to a strain isolated from India in July 2000. After the virus had been identified, Bulgaria's health ministry initiated contact tracing, screening of children at high risk (children from particularly vulnerable communities or living in nearby areas), a retrospective review of records, intensified surveillance for acute flaccid paralysis, and a mass vaccination campaign.²

Between 28 April and 22 May 2001, stool specimens were obtained from 117 children at high risk of exposure, who had been admitted to hospital in 9 different districts. Children who had been on the same ward as one of the cases and the household contacts of both cases were also screened. Wild type human poliovirus 1 was found in two of the children screened — the sibling of one of these had shared the hospital ward with the first case — but neither child showed symptoms of poliomyelitis. Further stool specimens were collected from 244 children country-wide after an outbreak of viral meningitis due to Echovirus 30 between June and August 2001. Although 7 children carried a vaccine-derived virus, none was found with a wild virus. A final survey of 155 high-risk children aged <3 years in 10 district hospitals was conducted between 23 August and 11 September 2001. No wild polio viruses were detected.

To control the outbreak, a regional mass vaccination campaign was launched on 19 April 2001. A national vaccination campaign of 2 rounds with the goal of vaccinating all 468,720 children aged 0–6 years was conducted during the periods 28 May to 1 June and 25–29 June 2001. Administrative estimates of coverage suggest that 94 per cent of all children in the country were vaccinated during the first round and 95 per cent during the second.

This outbreak illustrates the occurrence of transmission over several months of a wild poliovirus imported into a country that had been free of poliomyelitis for almost 10 years. The outbreak occurred because a virus was imported into Bulgaria from an unknown source and infected population subgroups with low immunity. High coverage reported for the campaign nationwide, improved performance of surveillance for acute flaccid paralysis, and the absence of wild polio viruses in subsequent stool surveys of children at high risk suggest that circulation of the wild virus has been interrupted.

References

1. Noah N, Ramsay M, Twisselmann B. Imported cases of polio in Bulgaria. *Eurosurveillance Weekly* 2001;5:010524. <<http://www.eurosurv.org/2001/010524.html>>

2. World Health Organization. Imported wild poliovirus causing poliomyelitis, Bulgaria, 2001. *Wkly Epidemiol Rec* 2001;76: 332-5. <<http://www.who.int/wer/pdf/2001/wer7643.pdf>>

Acute flaccid paralysis in the Philippines

Three cases of acute flaccid paralysis (AFP) associated with circulating vaccine-derived poliovirus (cVDPV) isolates were reported in the Philippines between 15 March and 26 July, 2001. The first case-patient, a child aged 8 years from northern Mindanao Island (500 miles south of Manila) who had received 3 doses of oral polio vaccine (OPV), had onset of paralysis on 15 March. A second child aged 3 years from Laguna province on Luzon Island (60 miles south of Manila) who had received 3 OPV doses, presented with signs of meningitis but no paralysis on 23 July. A third child aged 14 months from Cavite province (25 miles from Manila and 45 miles north of Laguna province) who had received 2 OPV doses, had onset of paralysis on 26 July. None of the patients had travelled outside of their province of residence since birth. Characterisation of isolates from the 3 patients revealed type 1 polio viruses derived from Sabin vaccine strain type 1, with a 3 per cent genetic sequence difference between Sabin 1 vaccine and vaccine-derived poliovirus (VDPV) isolates. The 3 polio viruses were not identical but were closely related (99% sequence homology); they also appeared to share an identical recombination site with a non-polio enterovirus in the non-capsid region of the genome.

Wild poliovirus was last reported in the Philippines in 1993, and national vaccination rounds were last conducted in the Philippines in 1997 followed by regional immunisation days in 1998 and 1999. Among the areas covered were Cebu, Davao, Manila, and parts of Mindanao; however, coverage did not extend to the 3 provinces now reporting cVDPV cases. Routine coverage with 3 OPV doses has been approximately 80 per cent nationwide since the early 1990s; however, coverage gaps are likely, particularly in slum areas.

A combination of 2 concurrent events within the virus is necessary for cVDPV emergence: reversion of attenuating mutations to increase neurovirulence, and a presumed increase in transmission characteristics that might be related to recombination with a non-polio enterovirus. The molecular basis for the second property is not understood. This is now the third documented episode of poliomyelitis-like illness (acute flaccid paralysis - AFP) due to circulating vaccine-derived poliovirus (cVDPV) with reversion to neurovirulence. The two prior episodes were on the island of Hispaniola (Dominican Republic and Haiti) and in Egypt. In addition, there were reports of circulating vaccine-derived poliovirus in Israel identified in sewage sampling but not associated with clinical illness.

As wild poliovirus circulation continues, there is still a need to keep up intensified vaccination efforts, as the risk of disease is still present. The occurrence of cVDPV in association with clinical disease is very disturbing as it adds another factor into the risk benefit equation of vaccination recommendations.

Variant CJD, incidence and trends — UK

Source: Eurosurveillance Weekly, Issue 46, 15 November 2001 (edited)

By the beginning of November 2001, the total number of cases of variant Creutzfeldt-Jakob disease (vCJD) reported in the United Kingdom had reached 111.

To monitor the underlying trend in vCJD incidence and identify any differences in this trend by factors such as birth cohort and sex, quarterly analyses are performed that estimate the underlying trend. Models fitted to the data also enable short-term predictions for the expected number of deaths in the next year and an estimate of the total number of people with onset of symptoms who are yet to be identified. These quarterly analyses are now available on the CJD surveillance unit Website at <www.cjd.ed.ac.uk>, with the first report covering the period up to September 2001. This report included 107 cases, of whom 101 had died. The distribution of these 107 cases by year of symptom onset, diagnosis, and death is shown in the Table. The median age at death for the cases in each year is also given; the overall median age was 28 (range 14-74 years). The median number of days from onset to diagnosis was 333 days and from onset to death was 401 days. Of the 107 cases, 56 (52%) were male.

The recent analyses showed that the underlying incidence is increasing by 22 per cent per year using date of symptom onset or 27 per cent per year using date of death.

The analysis using date of death included 101 cases. No adjustment for reporting delay was required for deaths because most cases are diagnosed before death. The estimated current quarterly incidence of deaths is 7.5, and, assuming the current trend continues, the total number of deaths in the next 12 months is predicted to be 35 (22-50).

So far the age at death has not increased with time as might be expected for an outbreak due to a point source in time. This stable age is generated by the fact that the underlying trend is increasing more quickly in those born after 1970 (42 per cent per year) compared to those born before 1970 (12 per cent per year). The difference between these trends is not quite significant ($P=0.087$) but, if real, may be generated by factors such as age dependent exposure or incubation periods.

These models allow short-term predictions and trend estimates but cannot be used for long-term predictions or predictions of the total size of the epidemic. This can only be attempted using techniques such as back calculation, as

recently performed by Huillard et al.¹ The quarterly analyses will continue to be performed in order to update short-term predictions, assess differences in trend by sex and cohort, and detect any changes in the incidence trend that might indicate that the epidemic has reached a peak.

Reference

1. Huillard d'Aignaux JN, Cousens, SN, Smith PG. Predictability of the UK variant Creutzfeldt-Jakob disease epidemic. Published online 25 October 2001; <www.sciencexpress.org> (Science Express Reports).

Missing gene increases variant Creutzfeldt-Jakob disease risk

Source BBC News Online, 14 November 2001 (edited)

Recent research suggests that people who lack a particular version of a gene involved in immune responses may be three times more likely to suffer new-variant Creutzfeldt-Jakob disease (vCJD). If the finding is borne out in larger studies, it could provide scientists with an important clue in their bid to develop therapies for the incurable brain disease. It may also help doctors to identify those people at risk. The gene, called DQ7, is part of a complex called HLA that produces molecules responsible for presenting bits of proteins to the immune system. It does not seem to offer protection against the sporadic form of the disease, in which rogue particles called prions are thought to form spontaneously in the brain, but it does appear to play a role in people who develop vCJD

The researchers studied the genetic make up of 50 patients with vCJD, approximately half of the population known to have the disease. Only 12 per cent of the patients possessed the DQ7 gene, compared with 36 per cent of the normal population. Writing in the journal *Nature*, the investigators suggest that the presence of DQ7 protects against vCJD. However, they warn that although they studied about half of all the people known to have contracted vCJD, their sample is still too small to be conclusive. The strong likelihood is that other genes are also involved — if a combination of genetic markers could be identified, then it might be possible to introduce mass screening for susceptibility to vCJD.

Reference

- Pathogenesis: HLA-DQ7 antigen and resistance to variant CJD. GS Jackson, JA Beck, C Navarrete, J Brown, PM Sutton, M Contreras & J Collinge.

Table. Cases of vCJD reported in the United Kingdom, diagnosed by September 2001 by year of onset, diagnosis, and death

Year	Onset	Diagnosis	Death	Median age at death
1994	8	0	0	-
1995	10	7	3	-
1996	11	8	10	30
1997	14	12	10	26
1998	17	17	18	25.5
1999	29	17	15	29
2000	18+	27	28	25.5
2001	0+	19	17	28

Dengue/DHF updates

14 November 2001

Nicaragua: Concern about the high rate of dengue fever

Nicaraguan Health Ministry officials expressed their concern about the high incidence of dengue fever this year that has already resulted in 11 deaths. Four people have died due to dengue fever since September alone, increasing dengue-related fatalities to 11 thus far this year and exceeding the number of deaths the disease caused over the same period last year. Confirmed cases of the more serious haemorrhagic dengue fever have risen to 222, much higher than the 91 cases reported over the first 11 months of last year. Some 1,390 cases of dengue fever have been reported in Nicaragua so far this year, up considerably from the 741 cases reported during the same time period in 2000.

Panama: Sixth dengue haemorrhagic fever case causes alarm

The sixth case of dengue haemorrhagic fever in Panama was confirmed on 13 November 2001. The Panamanian Health Minister said that: 'This definitely indicates a dengue fever epidemic in Panama; so, both community and society have to collaborate in the elimination of the (breeding) grounds of the *Aedes aegypti* mosquito.' According to figures issued by the Health Ministry, there were 317 classic dengue cases in Panama in 2000, including one haemorrhagic type and no deaths were reported, compared to the 6 haemorrhagic-type and 698 classic cases registered this year.

Dengue fever — Hawaii

The number of confirmed cases in Hawaii has reached 74, with the Centers for Disease Control and Prevention (CDC) in Atlanta confirming the first case of the mosquito-borne illness on the 'big island' of Hawaii. So far 56 of the cases have been on Maui, where the first locally transmitted cases of dengue appeared in early September. The CDC said that it was the first outbreak of dengue in Hawaii in more than 56 years.

Epidemiology of hepatitis E in Spain

Source: *Diario Medico*, 19 September 2001 (edited)

According to research at the Hospital Valle de Hebron in Barcelona, the epidemiology of the hepatitis E virus (HEV) in non-endemic countries must be reviewed, given that there are sporadic cases of HEV hepatitis in which pigs may be the animal reservoir. In industrialised countries, HEV may be associated with sporadic imported cases, although some studies show that 1-5 per cent of the population of those countries have antibodies.

The research project describes the detection and genetic characterisation of HEV strains in Spain, in a region not considered endemic, and the identification of pigs as animal reservoirs of HEV. In order to identify the viral strains, researchers used nested RT-PCR followed by sequencing of the resulting amplified fragments. ELISA was used for antibody detection in human and swine serum samples. Tests showed that 20 per cent of the analysed samples of serum from pigs of various ages and locations had antibodies against HEV. In addition, some strains of HEV

have been detected in residual waters in Barcelona and in the sera of patients from the same area with acute hepatitis. Over the past year, HEV RNA has been detected in 8 samples of residual waters. Of the 67 samples from hepatitis patients tested, 10 per cent had anti-HEV antibodies.¹

The initial report identifying the relationship between HEV and a swine virus was published in 1997.² Since then, HEV has been under consideration as a zoonotic disease. In addition there have been concerns with respect to HEV and xenotransplantation of pig organs for human transplants. Clearly, it is an emerging disease in terms of our knowledge and recognition of the organism.

References

1. Pina S, Buti M, Cotrina M, Piella J, Girones R. HEV identified in serum from humans with acute hepatitis and in sewage of animal origin in Spain. *J Hepatol* 2000;33:826-833.
2. Meng XJ, Purcell RH, Halbur PG, Lehman JR, Webb DM, Tsareva TS, et al. A novel virus in swine is closely related to the human hepatitis E virus. *Proc Natl Acad Sci U S A*. 1997;94:9860-9865. summary of findings can be found at: <<http://www.niaid.nih.gov/publications/deline/0398/hep.htm>>

Cryptococcus Neoformans — Canada

Source: *CBC News* 3 September 2001 (edited)

There have been about 25 cases of *Cryptococcus neoformans* in the province of British Columbia (BC) during the past 30 months: 5 times the normal rate. Four people have died from complications caused by the infection. The province's Centre for Disease Control is now concerned that otherwise healthy people are showing signs of *Cryptococcus neoformans* infection. Symptoms include chest pains, a stubborn cough, severe headaches, neck stiffness, and difficulty breathing.

There are several variations/strains of *Cryptococcus neoformans* of which the two most common are *C. neoformans* var. *neoformans* and *C. neoformans* var. *gattii*. The var. *gattii* is seen more frequently in tropical or subtropical climates (including parts of northern Australia). The organism is found in soil and bird droppings (including pigeons); the var. *gattii* has also been isolated from foliage and bark of certain species of eucalyptus trees. Sporadic cases of cryptococcosis occur in all parts of the world. Cell-mediated immunodeficiency and immunosuppression are predisposing conditions for clinical disease. Clinical disease includes a subacute or chronic meningitis, infection of lungs, kidneys, prostate and bone; skin involvement such as acneiform lesions, ulcers or subcutaneous nodules have also been described. Eye infections have resulted in blindness.

Mortality due to cryptococcosis increased from 0.09 per 100,000 in 1980, to 0.12 per 100,000 in 1994. Eighty per cent to 90 per cent of infections were AIDS-associated.

Yaws re-emergence — Papua New Guinea

Source: *World News from Radio Australia* 5 September 2001 (edited)

Health authorities in Papua New Guinea have reported an outbreak of yaws, a skin and bone disease, in the Bitapaka area on New Britain Island. Scientifically known as *Frambesia*, yaws mainly affects children living in humid

tropical regions. Its symptoms include lesions or skin eruptions that appear and disappear during the course of the disease. According to the acting district health officer in the Kokopo District, 3,000 cases of yaws have been confirmed over the past 4 weeks. Medical officers have carried out an intervention program, which includes awareness and prevention lessons.

According to the World Health Organization, yaws was supposed to have been fully eradicated. It affects people living in unhygienic conditions and can be spread by unsafe drinking water and lack of proper sanitation. Yaws has been known for several years to be re-emerging in Papua New Guinea. Once thought eradicated, it is apparent that the disease continues to be endemic there. It will probably remain so until problems of poverty and poor hygiene are solved.

Pacific Public Health Surveillance Network

The Pacific Public Health Surveillance Network serves to disseminate information about communicable diseases in the Pacific region through Pacnet. Pacnet may be accessed on registration, through the South Pacific Commission Website (<http://www.spc.org.nc>).

'Southern Hemisphere' influenza vaccine 2002

Source: Press release WHO/41 18 September 2001

The recommendation for the composition of the vaccine for the 2002 Southern Hemisphere influenza season has been decided and communicated to vaccine manufacturers, by the World Health Organization (WHO). About 200 million influenza vaccine doses are produced and given globally every year. The annual decision about the vaccine composition is made possible by the co-ordinated work of more than 110 influenza laboratories and four WHO Collaborating Centres.

WHO experts recommended that the influenza vaccine for 2002 in the Southern Hemisphere contain the following three components:

- A/Moscow/10/99(H3N2)-like virus
- A/New Caledonia/20/99(H1N1)-like virus
- B/Sichuan/379/99-like virus

This vaccine is intended for use from May to October 2002, the Southern Hemisphere influenza season. The timing of this WHO recommendation is critical to allow sufficient time for companies to produce a novel vaccine before the next influenza season starts. Based on the WHO recommendation, national authorities should approve the specific vaccine viruses and national public health authorities are responsible for recommendations regarding the use of vaccines.

The influenza season in the Northern Hemisphere will soon start and it is time for vaccination. Many countries have already begun advertising for vaccination campaigns focusing on high-risk groups (people 65 years or older; adults and children aged 6 months or older with chronic illnesses or who are immunocompromised).

The 'flu' has been estimated to infect as many as 100 million people each year in the Northern Hemisphere. While most healthy people fully recover from the flu, the disease can result in hospitalisation or even death. WHO, therefore, strongly recommends vaccination against influenza: the most important measure against the disease, particularly among those at high risk of developing complications.

Recommendations for influenza vaccine composition Northern Hemisphere: 2001-2002

- A/New Caledonia/20/99(H1N1)-like virus
- A/Moscow/10/99(H3N2)-like virus*
- B/Sichuan/379/99-like virus[†]

* The widely used vaccine strain A/Panama/2007/99 is an A/Moscow/10/99-like virus.

[†] B/Johannesburg/5/99 and B/Victoria/504/2000 are B/Sichuan/379/99-like viruses, which have been used for vaccine production.)

Molecular basis for influenza virulence

Molecular basis for high virulence of Hong Kong H5N1 influenza A viruses. Masato Hatta, Peng Gao, Peter Halfmann, and Yoshihiro Kawaoka Science 2001 293:1840-1842 (Abstract).

In 1997, an H5N1 influenza A virus was transmitted from birds to humans in Hong Kong, killing 6 of the 18 people infected. When mice were infected with the human isolates, 2 virulence groups became apparent. Using reverse genetics, we showed that a mutation at position 627 in the PB2 protein influenced the outcome of infection in mice. Moreover, high cleavability of the haemagglutinin glycoprotein was an essential requirement for lethal infection.

Recombination in the haemagglutinin gene of the 1918 'Spanish flu'. Mark J Gibbs, John S Armstrong, and Adrian J Gibbs Science 2001 293:1842-1845 (Abstract).

When gene sequences from the influenza virus that caused the 1918 pandemic were first compared with those of related viruses, they yielded few clues about its origins and virulence. Our reanalysis indicates that the haemagglutinin gene, a key virulence determinant, originated by recombination. The 'globular domain' of the 1918 haemagglutinin protein was encoded by a part of a gene derived from a swine-lineage influenza, whereas the 'stalk' was encoded by parts derived from a human-lineage influenza. Phylogenetic analyses showed that this recombination, which probably changed the virulence of the virus, occurred at the start of, or immediately before, the pandemic and thus may have triggered it.