

Factsheet on nipah virus infection

Nipah virus is a newly recognised zoonotic virus. The virus was discovered in 1999. It has caused disease in animals and in humans, through contact with infectious animals. The virus is named after the location where it was first detected in Malaysia. Nipah is closely related to another newly recognised zoonotic virus (1994), called Hendra virus, named after the town where it first appeared in Australia. Both Nipah and Hendra are members of the virus family Paramyxoviridae. Although members of this group of viruses have only caused a few focal outbreaks, the biologic

property of these viruses to infect a wide range of hosts and to produce a disease causing significant mortality in humans has made this emerging viral infection a public heath concern.

Natural host

It is currently believed that certain species of fruit bats are the natural hosts of both Nipah and Hendra viruses. They are distributed across an area encompassing northern, eastern and southeastern areas of Australia, Indonesia, Malaysia, the Philippines and some of the Pacific Islands. The bats appear to be susceptible to

infection with these viruses, but do not themselves become ill. It is not known how the virus is transmitted from bats to animals.

Transmission

The mode of transmission from animal to animal, and from animal to human is uncertain, but appears to require close contact with contaminated tissue or body fluids from infected animals. Nipah antibodies have been detected in pigs, other domestic and wild animals. The role of species other than pigs in transmitting infection to other animals has not yet been determined.

It is unlikely that Nipah virus is easily transmitted to man, although previous outbreak reports suggest that Nipah virus is transmitted from animals to humans more readily than Hendra virus. Despite frequent contact between fruit bats and humans there is no serological evidence of human infection among bat carers. Pigs were the apparent source of infection among most human cases in the Malaysian outbreak of Nipah, but other sources, such as infected dogs and cats, cannot be excluded. Human-to-human

transmission of Nipah virus has not been reported.

Clinical features

The incubation period is between 4 and 18 days. In many cases the infection is mild or inapparent (sub-clinical). In symptomatic cases, the onset is usually with "influenza-like" symptoms, with high fever and muscle pains (myalgia). The disease may progress to inflammation of the brain (encephalitis) with drowsiness, disorientation, convulsions and coma. Fifty percent of clinically apparent cases die.

Treatment

No drug therapies have yet been proven to be effective in treating Nipah infection. Treatment relies on providing intensive supportive care. There is some evidence that early treatment with the antiviral drug, ribavirin, can reduce both the duration of feverish illness and the severity of disease. However, the efficacy of this treatment in curing disease or improving survival is still uncertain.

Protection of Health Care Professionals: The risk of transmission of Nipah virus from sick animals to humans is thought to be low, and transmission from person-to-person has not yet been documented, even in the context of a large outbreak. Therefore, the risk of transmission of Nipah virus to health care workers is thought to be low. However, transmission without percutaneous exposure (through a break in the skin barrier) is theoretically possible, as respiratory secretions contain the virus. This is why it has been categorised as a biohazardous agent that should be managed in a high-

level biosecurity laboratory. It is recommended that close contact with body fluids and infected tissues be avoided if Nipah infection is suspected.

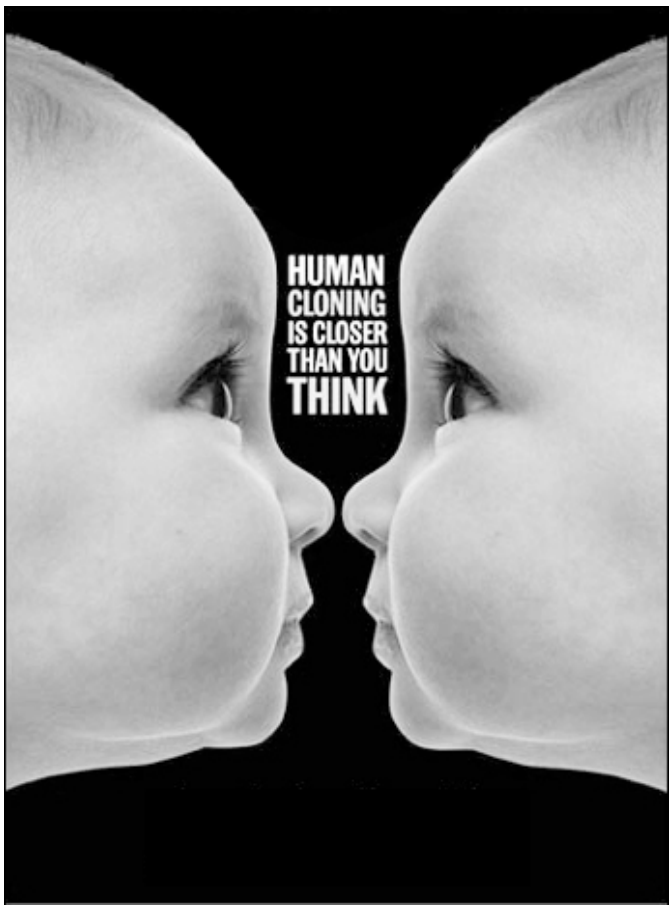
Outbreaks of Nipah and Hendra viruses

From September 1998 - April 1999, there was a large outbreak of encephalitis in Malaysia. During the investigation of this outbreak, Nipah virus, a previously unrecognised virus, was identified as the causal agent. A total of 265 people were infected, of whom 105 died. Ninety-three percent of cases had occupational exposure to pigs. An associated outbreak among abattoir workers in Singapore during March 1999 led to 11 cases, with 1 death. These workers had been handling pigs that had been imported from the outbreak areas in Malaysia.

There have been 3 recognized outbreaks of Hendra virus in Australia in 1994, 1995 and 1999. Three human cases, leading to 2 deaths were recorded in the 1994 and 1995 outbreaks. In 1995 a horse was infected, with associated human cases. The precise mode of virus transmission to the three Australian patients is not fully understood. All 3 individuals appear to have acquired their infection as a result of close contact with horses which were ill and later died.

Recently WHO has received reports of a total of 42 cases and 14 deaths attributed to Nipah-like virus infections in Bangladesh. Additional 45 cases are under investigation.

Source: <http://www.who.int>



Scientists describe Korean cloning breakthrough

South Korean scientists described how they cloned several human embryos and extracted valuable stem cells from one, and said their achievement showed an immediate need for a global ban on cloning to make babies.

They are the first researchers to prove they cloned a human being and said they did it not to make a baby but for the purposes of therapeutic cloning.

It could eventually involve taking a plug of skin from a patient and using it to grow perfectly matched tissue or even organs to treat diseases ranging from diabetes to Alzheimer's.

Woo Suk Hwang of Seoul National University, who led the study, and his colleagues said it was clearly wrong to use the technique for making an embryo that would be put into a woman's womb to grow into a baby.

"We call for a ban on reproductive cloning," Shin Yong Moon of Seoul National University, director of the center where the research was done, told a news conference in Seattle.

"To prevent reproductive cloning we would like to ask every country or every nation to have a law to prohibit reproductive cloning," added Moon, whose team's work was featured at the annual meeting of the American Association for the Advancement of Science.

U.S. President George W. Bush opposes all forms of cloning and his administration has pressed for bans in Congress and in the United Nations, without success. Supporters of therapeutic cloning say the battle has left the entire field unregulated and allowed renegade scientists a legal opening to try to clone a human baby.

Ethicist Laurie Zoloth of Northwestern University said the Korean report showed it was time for lawmakers around the world to agree on what to do about cloning. "No one religion, no one moral authority, can claim to be the final arbiter of this work," she told the news conference.

Long-range potential

Scientists welcomed the work as a breakthrough but stressed it would be years before any patient benefited from the technique.

"I emphasize that it is long-range, not short-range promise," Dr. Donald Kennedy, editor of the AAAS journal Science, which published the report, told the news conference.

"It represents, I think, an extraordinary series of technological accomplishments." Disease researchers were also cautious in their welcome.

"If it turns out to be true, it's a nice step forward," said Dr. Bob Goldstein of the Juvenile Diabetes Foundation. "It's measured

skepticism only in the sense that, until these things are repeated (by other scientists), it always makes us nervous."

Opponents condemned the report.

"Cloning research is impossible to do without exploiting women. It should be banned immediately," said Daniel McConchie, a spokesman for the Chicago-based Center for Bioethics and Human Dignity.

"Cloning human beings is wrong. It is unethical to tinker with human life," said U.S. Rep. Joe Pitts, a Pennsylvania Republican who supports efforts to ban the technique.

Hwang's team created several clones using eggs and cumulus cells donated by Korean women who had independently approached them. Cumulus cells are found in the ovaries and have been found to work especially well in cloning experiments.

The researchers removed the nuclei from the egg cells and replaced them with nuclei from the cumulus cells -- matching each woman's egg cell with her own cumulus cell. The nucleus contains 99 percent of a person's DNA.

Then they used a chemical trigger to start the eggs growing as if they had been fertilized by sperm.

Hard to do

Hwang stressed the difficulty of the experiment. Out of more than 200 tries, they got only 30 blastocysts -- the hollow balls of 100 to 200 cells that can be used as the source of stem cells.

When they tried to clone men using a piece of skin from the ear, they failed. They also failed when they tried to clone one woman using the hollowed-out egg of another woman.

Stem cells are found throughout the body and are a kind of master cell. Adult stem cells are difficult to find and to work with.

Kansas Republican Sen. Sam Brownback, who has led efforts to ban all human cloning, said using adult stem cells was the only acceptable route.

"I continue to be encouraged by the advances being made in adult stem cell treatments," he said in a statement. "We should all support the true scientific progress that is currently being made in the non-controversial fields of adult and non-embryonic stem cell research."

Cloning expert Dr. Irving Weissman of Stanford University disputed that work with adult stem cells showed as much promise as embryonic stem cells and said both avenues of research need to be pursued.

Source: <http://www.reuters.com>

Nipah-like virus infection in Bangladesh

From 4 January 2004 - 8 February 2004, WHO has received reports of a total of 42 cases and 14 deaths attributed to Nipah-like virus infections in Bangladesh. The infections have occurred in Manikganj (7 cases, 4 deaths) and Rajbari provinces (35 cases, 10 deaths). An additional 45 cases are under investigation.

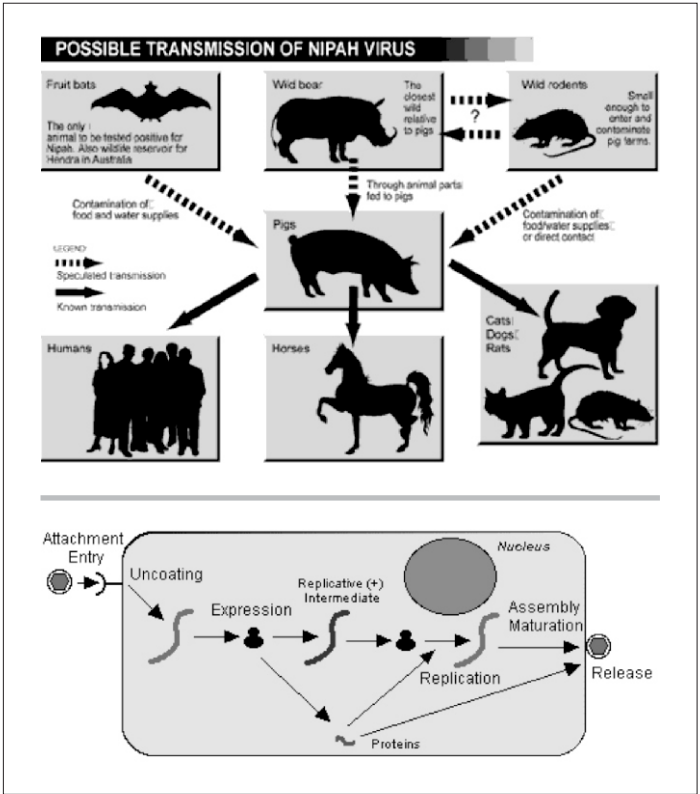
Laboratory testing, performed by Centers for Disease Control and Prevention (CDC), Atlanta has confirmed Nipah-like virus in 9 of the cases to date. A team comprising experts from WHO, partners in the Global Outbreak Alert and Response

Network, (CDC Atlanta, Epist, France and the International Centre for Diarrhoeal Disease Research, Bangladesh) and the Institute of Epidemiology Disease Control and Research, Bangladesh is assisting the Ministry with epidemiological investigations.

Further activities include case control studies, serosurveys of humans, and serosurveys of animals in the region to identify the viral reservoir.

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Treatment of childhood cancer

DR PARVEEN SHAHIDA AKHTAR

Childhood cancers are cancers that primarily affect children, teens and young adults. Even though cancers among the children represent only about 2-5 percent of all cancers, its patterns in the population merit special attention. Cancer not only affects the child, its effects the entire family as well. Parents are often faced with the uncertainty of child's future whilst having to cope with the exhausting demands of taking care of the child with cancer.

Causes of childhood cancer

There is no one single cause for cancer. Scientists believe that it is the interaction of many factors together that produces cancer. The factors involved may be genetic, environmental or constitutional characteristics of the individual. There are risk factors that may increase a person's chance of developing a disease. A risk factor does not necessarily cause the disease, but it may make the body less resistant to it. Family history, inheritance and genetics may play an important role in some childhood cancers. Some genetic disorders are known to alter the immune system. Exposures to certain viruses such as the Epstein-Barr virus (EBV) and human immunodeficiency virus are associated with some children cancer. Environmental exposures such as pesticides, fertilisers, and power lines have been researched for a direct link to childhood cancers. Some forms of high-dose chemotherapy and radiation have been linked to cancer. Overall, the cause of most of childhood cancers remain unknown but much research is under way to understand factors, which could lead to prevention of these diseases.

Difference from the adult cancer

It is important to understand that when cancer strikes children and young people, it affects them differently than it does adults. While most adult cancers result from lifestyle factors, such as smoking, diet, occupation, and other exposure to cancer-causing agents, the causes of most childhood cancers, are not yet known. While adult cancers are primarily those of the lung, oral cavity & oropharynx, cervix uteri, breast, prostate and gastrointestinal cancers. Childhood

cancers are mostly those of the white blood cells (leukemias), brain, bone, the lymphatic system and tumors of the muscles, kidneys and nervous system. Each of these behaves differently, but all are characterized by an uncontrolled proliferation of abnormal cells. Only about 20-40 percent of adults with cancer show evidence that the disease has spread at the time of diagnosis, yet 80 percent of children show that cancer has spread to distant sites in the body when the disease is first diagnosed. Instead, the prognosis of childhood cancer is much better than that of adult cancer. Because childhood cancer is more responsive to therapy and a child can tolerate more aggressive therapy as well.

Types of childhood cancer

There is variation in occurrence according to geographical distribution.

Leukemias: Leukemia is cancer of the bone marrow and tissues that make the blood cells. When leukemia strikes, the body makes an abundance of abnormal white cells that do not perform their proper functions. Instead, they invade the marrow and crowd out normal healthy blood cells, making the patient susceptible to anemia, infection and bruising. Acute Lymphoblastic Leukemia (ALL,) which laboratory and clinical research have achieved remarkable progress in fighting. About 70 percent of children can now be cured.

Lymphomas: Lymphoma is a tumor of the lymphocyte (lymph) tissues (cells of the immune system). Lymphocytes are cells that help to fight off infection. Because lymph tissue is in many parts of the body (lymph nodes, skin, stomach, intestines and other organs), lymphomas can start almost anywhere. Lymphoma is of two broad headings, -Hodgkin's disease, and Non-Hodgkin's lymphoma. Non-Hodgkin's lymphoma is more common in children than is Hodgkin's disease. Today, treatments can cure many children, and other promising treatments are being developed to help even more young people.

Brain Tumors: Tumors of the brain and spinal cord are the most common types of solid tumors in children. Some tumors are benign, and some children can be cured by surgery. Today, 20 percent of all primary brain tumors arise in

children younger than age 15, with a peak in incidence between the ages of five and 10 years. More boys than girls develop brain tumors.

Retinoblastoma: is a malignant tumor of retina (a thin membrane at the back of the eye). This is a common type of tumor among the children below 5 years of age. This disease received a great deal of attention because it is the first cancer for which researchers identified a "tumor suppressor gene". Non-heritable retinoblastoma has a higher incidence among less affluent populations, suggesting an association with poor living conditions and maybe an infectious etiology.



Bone Cancers: The common bone cancers are osteogenic sarcoma and Ewing's sarcoma. Osteogenic sarcoma in children occurs most often during adolescent growth spurts, and 85 percent of those teenagers have tumors on their legs or arms, half of them around the knee. Ewing's sarcoma differs from osteosarcoma in that it affects the bone shaft, and tends to be found in bones other than the long bones of the arm and the leg, such as the ribs. During the period from 1950 to 1980, a 50% reduction in child deaths due to bone sarcoma was achieved due to research.

Wilms' Tumor: This rapidly developing tumor of the kidney most often appears in children, between the ages of two and four years of age. Wilms' Tumor in children behaves differently than kidney cancer in adults. In children, the disease often metastasizes to the lungs. In the past, mortality from this cancer was extremely high. However, therapies that combine surgery, radiation therapy and chemotherapy, have been very effective in controlling the disease. As a result, cure rates for Wilms' Tumor have risen sharply.

Neuroblastoma: is a cancer of the sympathetic nervous system and the most common tumor outside of the brain. Generally occurs in children under age of five. Neuroblastoma spreads quickly, and is often discovered only after the disease is widespread. The early stages of neuroblastoma are curable by surgery alone. Researchers have discovered new, increasingly effective treatments for the advanced stages of the disease.

Rhabdomyosarcoma: The most common soft tissue sarcoma in children, called malignant neoplasm originates in skeletal muscle. Although it can occur in any muscle tissue, it is generally found in the head and neck area (including the eye socket), the genitourinary tract, or in the extremities. Although rhabdomyosarcoma tends to spread rapidly, its symptoms are quite obvious compared to other forms of childhood cancer. Overall prognosis for curing this disease has resulted from the development of improved chemotherapies.

Other rare forms of childhood cancers include germ cell tumors, thyroid cancer, malignant melanoma, testicular tumors (usually during puberty,) and primary cancers in the kidney, liver, and lung, stomach and colorectal cancer.

Success story of childhood cancer treatment

In the last 40 years, there has been substantial improvement in survival of childhood cancer and more than two-thirds can now expect to be long term survivors (United Kingdom children's cancer study group). This has been brought about largely as a result of the application of chemotherapy including surgery and radiotherapy in an organized way. Cancer is a complex illness. A child with cancer must be diagnosed precisely and

treated by a team of a cooperative multidisciplinary specialties such as pediatric oncologists, radiation oncologists, surgical oncologists, pathology, radiology and allied pediatric health professionals who have experience in the evaluation, staging, surgical management, radiation treatment and administration of intensive chemotherapy regimens. Such teams are found only in major children's hospitals, university medical centers, Medical College Hospitals and cancer centers.

Treatment of childhood cancer

The types of treatment used most often to treat cancer are surgery, chemotherapy, radiation therapy, immunotherapy, and bone marrow or peripheral blood stem cell transplantation. Doctors use these treatments to destroy cancer cells. Depending on the type of cancer, children may have one kind of treatment or a combination of treatments. Most children receive a combination of treatments, called combination therapy. Besides the specific treatment (anticancer therapy), the young patients need special care such as pain relief, nutrition, treatment for infections, immunizations, bleeding, transfusions, and dental/mouth care which all are part of supportive care. The goal of supportive care is to prevent or lessen the side effects of the treatment and the disease.

A diagnosis of childhood cancer is devastating for the family. Childhood cancer is treated aggressively, often with a combination of chemotherapy, radiation, and surgery, at a time of life when bodies are growing and developing. Treatment has a significant long-term impact on children's endocrine, heart, and cognitive functions. Additionally, parents of children with cancer are often young, have a limited income, and they have other children. One parent often needs to give up a job to take care of their child being treated for cancer. The needs are great. The volunteer service and charitable organization's help is an essential part of the management of the child with cancer in the developing country like Bangladesh.

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