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*****Experts warn health care personnel that disease-causing agent is resistant to conventional sterilization procedures.

DALLAS--A rare, mind-destroying disease that is always fatal, known as Creutzfeldt-Jakob Disease (CJD), is much more resistant to standard sterilization measures than was previously thought.

Conventional sterilization measures normally effective in killing organisms--such as boiling, bleach, formalin, ethanol, Lysol, detergents, alcoholic iodine, acetone and ultraviolet irradiation--are ineffective in destroying the disease-causing agent responsible for CJD.

A team of medical experts, led by Dr. Roger Rosenberg, professor and chairman of the Department of Neurology at The University of Texas Health Science Center at Dallas, outlined precautions for health care personnel in handling tissues, fluids and other contaminated materials from patients with documented or suspected Creutzfeldt-Jakob Disease.

The group's report, developed for the American Neurological Association Committee on Health Care Issues, was published in the January issue of the Annals of Neurology.

CJD, which each year affects as few as one person per million, typically kills within a year of the first symptoms. These symptoms include rapid memory loss, blindness and loss of balance. While the symptoms of CJD are similar to other dementing diseases, such as Alzheimer's Disease, CJD is rapidly fatal. Alzheimer's Disease patients, for example, often live 10 years after diagnosis.

Creutzfeldt-Jakob is sometimes referred to as a "slow virus," since it has a long incubation period of months to decades. The organism, however, is neither a virus nor a bacterium; its classification is uncertain. Presently there is no treatment, no cure and no vaccine for the disease.

Transmission of the disease agent requires direct contact with body fluids, such as by sticking oneself with a contaminated needle or transferring contaminated fluids through an open cut or insect bite. The disease also can be transferred by tissue transplantation, which Rosenberg says raises concerns about using organs such as the heart, liver and kidneys from donors with dementia-type diseases.

There is no evidence the disease can be transmitted person-to-person through casual or sexual contact. "While CJD is highly infectious, the disease agent is not highly contagious," says Rosenberg.

Included on the team with Rosenberg were UTHSCD neuropathologist Dr. Charles L. White III; Nobel laureate Dr. Carleton Gajdusek and Dr. Paul Brown, both at the National Institutes of Health; Dr. Joseph J. Volpe of Washington University; Dr. Jerome Posner of Cornell University Medical College; and Dr. Peter James Dyck of the Mayo Clinic.

In their report, the group stressed greater care in labeling CJD-contaminated blood and materials as well as employing more strenuous sterilization efforts for killing the organism after the use of surgical instruments.

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Routine steam autoclaving used to destroy viruses and bacteria--that is, at either 121 degrees Celsius or 132 C for 15 to 30 minutes—is only partially effective in killing CJD. Also partially effective is immersion in very concentrated solutions of sodium hydroxide for 15 minutes or in less concentrated sodium hydroxide for one hour.

To be fully effective in killing the disease-causing agent, sterilization procedures must include steam autoclaving for one hour at 132 C and/or immersion in very concentrated sodium hydroxide for one hour at room temperature.

The report also states that blood from a CJD-contaminated person should not simply be discarded after laboratory analysis, but all samples of blood, tissues and urine first should be thoroughly sterilized. Special care should also be taken in performing biopsies or autopsies on persons with CJD or suspected CJD.

There is supporting evidence that CJD is related to the pathogen causing kuru among natives of New Guinea, whose cannibalistic rituals involve the handling and eating of brains often infected with the disease. Data collected by Gajdusek show that kuru was not transmitted without opening the corpses. There was no person-to-person transmission from mother to fetus through the placenta nor at or around the time of birth. For his work in identifying kuru, Gajdusek was awarded the 1976 Nobel Prize in medicine or physiology.

Evidence shows that CJD, like kuru, can be transmitted only by direct contact with blood, spinal fluid, urine and internal organ tissues of a diseased person. Of the documented cases cited in the group's report, one patient was shown to have contracted the disease after corneal transplantation from a donor with CJD. Two other patients developed CJD after implantation of depth electrodes for epilepsy after the electrodes had been used for a CJD patient and were sterilized by usual, conventional techniques.

Several young patients recently developed CJD, apparently after receiving human growth hormone from pituitary glands gathered on autopsy and distributed through the National Hormone and Pituitary Program. Since 1963, 10,000 patients received growth hormone under this program, in which pituitary glands were gathered from 100,000 to 200,000 cadavers. Three patients receiving growth hormone have died of CJD. Now the hormone is being produced by genetic engineering techniques, which totally avoid contamination by CJD tissue.

There was one death reported of a neurosurgeon who contracted CJD. However, there have been no documented cases of CJD among general pathologists, neuropathologists, neurologists, laboratory technicians, autopsy technicians, morticians or virologists. The rare cases in which spouses have been infected show the disease occured nearly simultaneously in both spouses, indicating a common source of infection rather than cross-contamination.

Rosenberg says that no diagnostic test is readily available for Creutzfeldt-Jakob. Currently, diagnosis is made by neuropathological examination after a biopsy or autopsy and then by injecting samples of brain tissue into a laboratory animal and waiting months to a year to see if the animal has contracted the disease. On occasion an electroencephalogram may show a characteristic and virtually diagnostic pattern in a minority of patients.

Brain changes caused by the disease are called "spongiform encephalopathy," since microscopic vacuoles are produced in the brain that look like Swiss cheese, according to White, the group's neuropathologist.

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