

PROGRESSIVE INFLAMMATORY NEUROPATHY (PIN) AMONG SWINE SLAUGHTERHOUSE WORKERS IN MINNESOTA, UNITED STATES, 2007-2008

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Between October 2007 and January 2008, 12 cases of a disease subsequently termed progressive inflammatory neuropathy (PIN) have been reported among workers in a swine slaughterhouse in Minnesota, United States. The onset of illness ranged from November 2006 through November 2007. The patients were between 21 and 51 years old, six were women.

Symptoms ranged from acute paralysis to gradually progressive symmetric weakness lasting from 8 to 213 days. Eleven patients had evidence of axonal or demyelinating peripheral neuropathy by electrodiagnostic testing. Cerebrospinal fluid obtained from seven patients showed elevated protein levels (median: 125 mg/dL; range: 75-231 mg/dL) with no or minimal pleocytosis (median: 1 cell/dL; range: 1-73 cells/dL in a nontraumatic tap). In five patients inflammation was shown on spinal magnetic resonance imaging.

The case-control study conducted in the course of the investigation indicated that the disease was associated with having worked at an area where swine heads were processed using a compressed-air device to extract pig brains. In the process of blowing compressed air into the pig skull, brain material might have been splattered or even aerosolized, and workers might have been exposed through inhalation or contact with mucous membranes. One hypothesis for development of PIN is that worker exposure to aerosolized pig neural protein might have induced an autoimmune-mediated peripheral neuropathy. Additional investigation of the characteristics and causes of PIN is under way.

To date no infectious agent has been identified, and the disease was not associated with travel; exposure to chemicals, fertilizers, or insecticides; use of medicines or vaccination. Pigs slaughtered at the plant have passed inspection by the food safety authorities and no food-borne risk to the general population was identified.

A review of 25 large pig slaughterhouses in the United States revealed that only three plants were using compressed-air devices for pig-brain extraction, and all have currently halted the use of this technique. To date there is no evidence of this practice being in use or cases of PIN occurring in Europe, but the relevant European Union bodies are aware of the event.

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