

An Autopsy Case of Swine-Origin N1H1 Influenza Viral Infection

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Background:

In late March of 2009, the outbreak of respiratory illness caused by novel swine-origin N1H1 influenza virus was confirmed in Mexico. We also experienced a pandemic of the N1H1 influenza virus in Okinawa, Japan. We present an autopsy case of a young woman who had been healthy until she was infected with H1N1 influenza virus; unfortunately, she died from respiratory complications.

Case Report:

On August 26th, 2009, a 24-year-old previously healthy woman visited a nearby hospital because of high fever and cough. N1H1 influenza virus infection was confirmed with a polymerase chain reaction (PCR) assay and she was treated with zanamivir hydrate. On August 31st, she was referred to our medical center because of severe respiratory complications from N1H1 influenza viral infection. At our emergency department, she presented with tachycardia, hyperthermia, and hypotension. Her chest radiograph showed pneumonia with bilateral alveolar shadows (predominantly basal). Peripheral O₂ saturation was 78% with room air. Her serum lactate dehydrogenase (LDH) was 1,950 IU/L; creatine phosphokinase (CPK), 3,607 IU/L; white blood cell count (WBC), 1,030/μL; c-reactive protein (CRP), 9.4 mg/dL. She was intubated and put on a mechanical ventilator. She was treated with meropenem (0.5gm x4 /day), vancomycin (1gm x2 /day) and sivelestat sodium hydrate for acute respiratory distress syndrome (ARDS). Low WBC and platelet counts, and high LDH and CPK levels, suggested hemophagocytosis, which was revealed by a bone marrow biopsy. On September 1st, her respiratory condition exacerbated, and she was admitted to the intensive care unit (ICU), and put on an extracorporeal membrane oxygenation (ECMO). On September 9th, hypertension and mydriasis was observed. A CT scan revealed subarachnoid hemorrhage (SAH) and cerebral herniation. On September 15th, she expired and an autopsy was done with her family's consent.

Results:

The right lung weighed 362 gm and left lung, 286gm. Both lungs sank in the formalin liquid. The lung tissue showed hemorrhagic necrosis, squamous metaplasia, glandular

metaplasia. Bacterial and/or fungal colonies were not identified in lung tissue. Bacterial cultures were also negative. The lungs were severely damaged in the period of approximately 2 weeks. The brain showed necrotic changes. There weren't any apparent aneurysms or arteriovenous malformations in the brain to explain SAH, and we speculated that SAH was a side effect of ECMO. The liver showed central fatty changes and bile stasis.

Conclusion:

A swine-origin N1H1 influenza viral infection can cause death in a previously healthy young woman.