Acute Encephalitis and Death Following Asian Influenza

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PUBLIC HEALTH REPORTS to date have indicated the present epidemic of Asian influenza is mild and in general without serious complications. In the case here reported the patient was admitted to the psychiatric department of Herrick Memorial Hospital because of acute mental symptoms and acute basal ganglia and midbrain neurologic manifestations. The patient died, apparently from an overwhelming influenzal hemorrhagic bronchopneumonia and medullary failure. Virus study and necropsy were consistent with the clinical diagnosis of influenza and toxic encephalitis.

The senior author, while in residency training, observed large numbers of cases of acute encephalitides following the 1918 epidemic of influenza from 1920-24,[1,2] and many of those cases resembled the one here reported. The mortality rate at that time was at least 25 per cent.

REPORT OF A CASE

The patient, a girl 16 years of age, was transferred from the Brookside General Hospital in Richmond to the psychiatric department at Herrick Memorial Hospital because of extreme overactivity, excitability, cursing and throwing of objects, which were attributed to toxic psychosis.

On August 26, 1957, the parents stated that the patient had been visiting in the country and on August 17 had been exposed to an ill patient who had chills, fever and general malaise and was diagnosed as having Asiatic influenza.

On August 20 the patient had chills and fever, the temperature reaching 102°F., with increasing malaise, vomiting and dizziness. She was admitted to Brookside Hospital August 25. On August 26 she was so disturbed that transfer to the psychiatric department was advised. Soon after admission she became comatose and had spasmodic movements of all four extremities. Reflexes were hyperactive. She frequently assumed an opisthotonic position of the body, and bilateral extensor plantar reflexes were present. These involuntary movements continued with extensor spasms, but there was never definite rigidity of the neck. The pulse rate was 128 and respirations 36 per minute. The temperature at admittance was 98.6°F. and within 12 hours reached 102°F. Spinal puncture was done and the pressure was 290 mm. of water. Removal of 8 cc. of fluid reduced it to 130 mm. The fluid was clear. It contained 3 lymphocytes per cu. mm. The total protein content was 20 mg. per 100 cc., chlorides 129 mEq. per liter and glucose 100 mg. per 100 cc. Leukocytes numbered 20,700 per cu. mm. of blood—67 per cent segmented neutrophils and 20 per cent nonsegmented polymorphonuclear cells. Spinal puncture was done again and there was no increase in cell content.

Medical consultations were called and pneumonic signs were observed clinically and roentgenographically. Large doses of antibiotics were given. Hypertonic glucose, 150 cc. of 50 per cent solution was given intravenously on one occasion because of signs of acute cerebral edema. All treatment was ineffectual.

The body temperature rose to 104 degrees, the pulse continued rapid and respirations increased to 36 to 40 per minute. The muscular twitchings continued and there were occasional hiccoughing attacks. Breathing became labored and accumulation of mucus in the throat necessitated suction from time to time. The patient suddenly died at about 10 p.m. on August 27.

Specimens of blood taken postmortem were sent to the State Public Health Virus Laboratory for virus and influenzal studies. The report was: Very strong reaction to Type A influenzal virus, 1:256—positive; to influenza B, 1:8—negative; hemagglutination inhibition, Asian influenza, 1:16.*

Necropsy was done and the report was as follows: "Pathologic changes were limited to the lungs and tracheobronchial tree and the brain. A résumé of the findings in these structures follows: The left lung weighed 680 grams, the right lung 730 grams. They were greatly overexpanded and the pleura was smooth. The tissue appeared quite heavy and boggy. On section, the tissue was mottled—bright red with darker bluish-red patches—and a large quantity of

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*In a personal communication, Dr. Edwin H. Lennette, chief of the Viral and Rickettsial Disease Laboratory, California State Department of Public Health, indicated that in view of findings that few persons possess hemagglutination-inhibition antibodies to Asian strain of influenza A virus, an antibody titer of 1:16 would appear to have significance as evidence of infection with Asian strain.

frothy, thin bloody fluid flowed from it. The tissue was everywhere moderately firm and boggy. Crepitation was rather feeble and coarse throughout. No solid areas were found. The pulmonary arteries were open and showed no changes. The trachea and bronchi contained a considerable amount of grayish, thin, mucous fluid. The lining was red with some patches of dark purple-red scattered in it. It was rather granular. The hilus and mediastinal nodes remained rather small, none measuring over 5 mm. On section they were grayish-red, wet and soft. Microscopic examination showed marked diffuse edema with most of the alveolar spaces filled with fluid. Within this there were desquamated lining cells and in scattered foci, small numbers of red blood cells and occasional pus cells. The alveoli were generally distended, but there were small focal areas of collapse. In some of these areas, and in the alveolar walls about them, there were infiltrating lymphocytes and occasional pus cells, so that the walls were thickened. This was especially pronounced in the peribronchial tissue, including a perimeter of alveoli. The cell collections in these areas were pronounced. There was decided diffuse congestion of small vessels and sinusoids throughout the lungs. The bronchi and trachea showed generalized swelling, with edema and hyperemia of the mucosa, collection of lymphocytes and pus cells, and occasional areas of epithelial desquamation. Occasionally the inflammatory zones of the submucosa extended through the wall and became a part of the peribronchial inflammatory zone.

"The brain was swollen, weighing 1,405 grams. The brain surface was flat, with convolutions and sulci almost extinct. There was a heavy groove made by pressure about the medulla and the tips of the cerebellar lobes. Also, there were rather deep incisural notches. The pia-arachnoid was smooth and moderately congested. Multiple step-wise sections of the brain showed decided edema throughout. The lateral ventricles were completely closed by swelling of the brain. The choroid plexuses appeared typical. There was rather pronounced hyperemia with multiple pinpoint red dots seen throughout the brain, more marked at the base. The blood vessels were open and appeared unchanged. Microscopic examination showed marked diffuse edema. About the congested vessels, there were small areas of hemorrhage and often areas of edematous fluid collection. There were many small areas showing degenerative change of the ganglion cells of varying degree up to complete degeneration.

"*Diagnosis:* Acute tracheobronchitis with bilateral pneumonitis and associated massive edema and hyperemia of the lungs. The changes in the brain—edema, hyperemia and perivascular hemorrhages—were considered acute toxic changes."

SUMMARY

A 16-year-old girl who was put in hospital because of increasing malaise, vomiting and dizziness of five days' duration soon became so mentally disturbed that she was transferred to a psychiatric unit. There she became comatose soon after admittance and signs and symptoms referable to the central nervous system were present. Hemagglutination inhibition antibody titer of 1:16 for Asian strain of influenza A virus was considered evidence of infection.

The patient died seven days after the onset of symptoms. At autopsy pneumonic changes and toxic changes in the brain were noted.

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Intraepidermal Cancer of the Anus; Evolution to Invasive Growth

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INTRAEPIDERMAL CANCER of the anal region of Bowenoid type is a rather uncommon chronic dermatosis of slow malignant maturation that has been receiving some recognition recently.[4,14] In the past two years there have been additional reports of diagnosed and treated anal intraepidermal lesions.[3,5,7,8] Gordon[6] in a recent paper observed that five unsuspected *in situ* cancerous lesions had been discovered histologically in anal tissues removed for minor surgical conditions among 1,890 consecutive operative cases. It is probable that wider use of tissue examination in minor anorectal operations and total excisional biopsy studies of all chronic anal lesions would increase the number of cases of diagnosis of this early type of anal cancer before more lethal qualities could develop.

The slow growth potential of intraepidermal malignant lesions of Bowenoid type serves to keep the lesion *in situ* for many years. Montgomery[12] studied ten patients in whom glabrous skin tumors of this type remained constant for from six to thirty years without progression in size or degree of malignancy. However, Stout[13] and Helwig[9] both noted that an infiltrative or metastatic type of cancer developed in 2 per cent or more of the intraepidermal skin lesions. Bowen[1,2] used the title "Precancerous Dermatoses" for his two original papers on this condition, written in 1912 and 1915, but in describing the disease in a third patient he reported progression to metastatic cancer in axillary nodes. Therefore these lesions must be considered not as precancerous but as intraepidermal epitheliomata of Broder's classification Grade 0 or ½ from the outset, with the

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