

A rare case of death from acute hemorrhagic necrosis of the pancreas after influenza infection

Marin Baltov^{1,2}, Iliya Bivolarski^{1,2}, Ivan Tsranchev^{1,2}, Milena Gulinac^{1,2}, Plamena Dineva², Georgi Ivanov^{1,2}

From ¹Department of General and Clinical Pathology and Forensic Medicine, Medical University of Plovdiv, ²Department of Forensic Medicine, University Hospital Saint George, Plovdiv, Bulgaria

Correspondence to: Ivan Tsranchev, Brezovska 58 Street, Postal Code: 4000, Plovdiv, Bulgaria. Phone: +359878700486. E-mail: tsranchev@inbox.ru

Received - 27 July 2017

Initial Review - 21 August 2017

Published Online - 19 September 2017

ABSTRACT

Acute pancreatitis is an inflammatory response of the pancreas that can be caused by various conditions, including chronic alcoholism, gallstones, hypertriglyceridemia, narcotics, and tumors. Furthermore, this can be provoked by various infectious agents. Experimental studies suggest the role of influenza virus as a cause of inflammation of the pancreas. Few cases are published about H1N1 and avian influenza induced destruction of the pancreas. This case report refers to a 29-year-old man who attended an outpatient clinic, and who died suddenly at his home after acute viral infection. The forensic and histological examinations showed that death had occurred as a result of acute hemorrhagic necrosis of the pancreas caused by viral infection. The microscopical findings were hemorrhagic-necrotizing changes into the trachea, hemorrhages into the lungs and inflammatory infiltrate with lymphocytes, which features correspond to the typical changes caused by the influenza virus.

Key words: *Clinical infectious diseases, Death, Forensic pathology, Influenza, Pancreas, Postmortem*

A rare complication of an influenza infection is the acute pancreatitis, which can be induced by many conditions, including chronic alcoholism, gallstones, smoking, hypertriglyceridemia, drugs, and tumors. In Bulgaria, there are no reported cases of acute pancreatitis caused by influenza viruses. We, hereby, are reporting one such case of death of a young man which was due to influenza induced acute hemorrhagic pancreatitis.

CASE REPORT

We report a case of a 29-year-old man who died after an influenza infection, with symptoms of fever, wet cough, and myalgia, and muscle weakness. The signs on clinical examinations were fever between 37.9° and 38.4°C, fatigued appearance, tachycardia, red and watery eyes, and warm skin. Symptoms were treated with oral antiviral medications. The dead body was found 2 days after death at his home. Forensic and histological examinations were performed. Parts of the internal organs were fixed in a 10% formaldehyde solution, after which the necropsy materials were processed by the routine paraffin method, and after that, the histological preparations were stained with hematoxylin and eosin.

Macroscopically, over the corpse, there were no external visible traumatic injuries. The trachea showed hemorrhagic necrotic changes. The same changes were well present over the

major bronchi and lungs, having hemorrhages and edema. The brain had the picture of brain edema. The white matter was swollen, soft with flattened gyri and narrowed sulci. Sectioned surface was soft. The pancreas was swollen and edematous with chalky - white fat necrosis and blue-black diffuse hemorrhages. The peritoneal cavity was filled with white flecks in the omentum, mesentery and per pancreatic tissue. Hemorrhages were noticed on the serosal surface of the intestines.

Microscopically, the trachea had the picture of hemorrhagic-necrotizing tracheitis, with diffuse inflammatory infiltration with lymphocytes in the wall. The lungs had severe vascular congestion, with focal parenchymatous hemorrhages and emphysematous changes, pulmonary edema with multiple inflammatory cells having macrophages (Figs. 1 and 2). The pancreas showed diffuse fat necrosis of the pancreatic lobules and ducts along with the necrosis of the arteries and arterioles with multiple thrombosis and massive hemorrhages. Around the areas of necrosis and hemorrhages, there were fields of inflammatory reaction, chiefly by polymorphs (Figs. 3 and 4). The kidneys had features of extreme corticomedullary congestion. The liver showed venous stasis, intrahepatic cholestasis, and adipose degeneration of the some hepatocytes. Inside the brain parenchyma, there were features suggestive of vascular congestion, per cellular and intracellular edema. The myocardium had vascular congestion and interstitial edema. The spleen had shown features of vascular congestion and confluent hemorrhages in the red pulp.

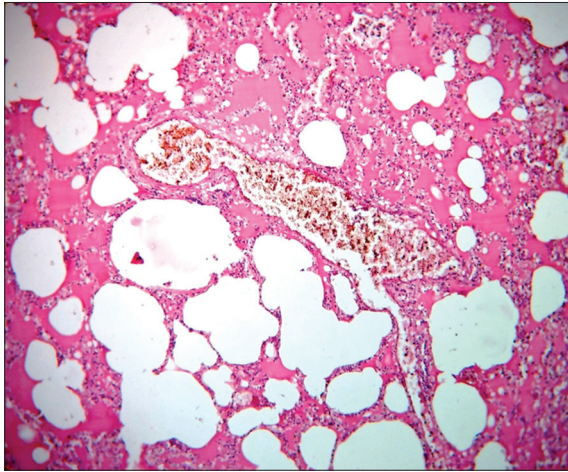


Figure 1: Severe vascular congestion, with focal parenchymatous hemorrhages and emphysematous changes, pulmonary edema with multiple inflammatory cells - macrophages

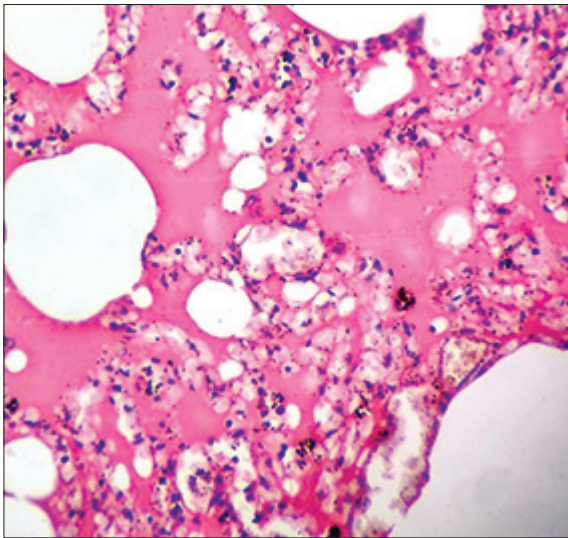


Figure 2: Necrosis of the arteries and arterioles with multiple thrombosis and massive hemorrhages along with surrounding fields of inflammatory reaction

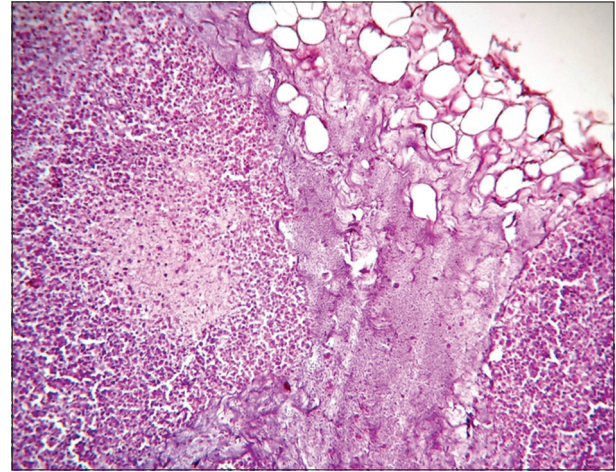


Figure 3: Diffuse fat necrosis of pancreatic lobules and ducts, also necrosis of the arteries and arterioles with multiple thrombosis and massive hemorrhages. Around the areas of necrosis and hemorrhages there were fields of inflammatory reaction

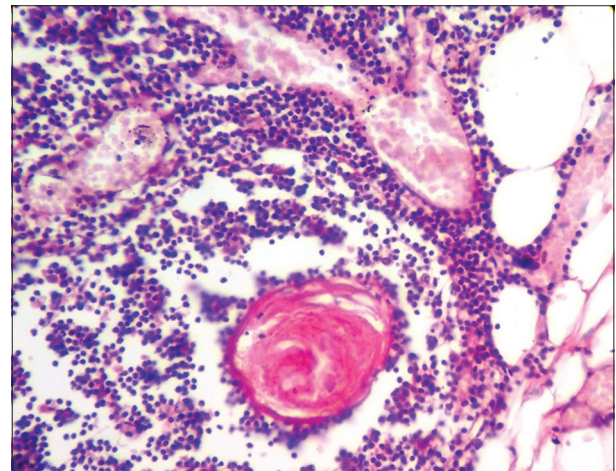


Figure 4: Vascular congestion, with focal parenchymatous hemorrhages and emphysematous changes

DISCUSSION

Every year in the winter, different strains of influenza viruses cause acute respiratory infections. The most common complications which they can cause have been well studied. It is known that 75% of cases of acute pancreatitis are caused by alcoholism or gallstones, and in 15-25% of these cases, the cause was idiopathic. Some of these idiopathic cases are associated with infectious agents - viruses, bacteria, fungi, or parasites. Studies suggest the role of influenza virus as a cause of inflammation of the pancreas [1]. Few cases are published about H1N1 and avian influenza destruction of the pancreas [1-5]. Cases of acute pancreatitis after flu have been detected even in children [6].

Acute pancreatic necrosis is a life-threatening condition resulting in failure of many organs and death [7]. In this case, acute hemorrhagic necrotic pancreatitis was considered as the primary disease. The hemodynamic shock, morphologically represented by extreme vascular congestion, multiple hemorrhages in

the internal organs, microthrombosis, multi-organ failure, pulmonary, and cerebral edema are the cause of the death. Biliary stone disease or any other forms of mechanical obstruction of the biliary duct with reflux to the major pancreatic pathways have not been established. Furthermore, no specific hepatic changes of chronic alcoholism were seen.

Findings in support of the infective etiology of the acute pancreatitis, in this case, were hemorrhagic necrotizing tracheitis and pulmonary hemorrhages, which are the basic morphological signs in the severe forms of influenza infection. The histopathologic picture is similar with typical inflammatory infiltrates in the tracheal wall and the mesenteric fatty tissues. In Republic of Bulgaria, the number of patients, infected with influenza virus every year, is really low. In this case, the lack of clinical and histopathologic findings to support chronic alcoholism and biliary obstruction, the younger age of the patient, the available clinical data about influenza infection before death, and the morphological findings of viral infection suggested that the acute severe hemorrhagic pancreatitis was due to a viral infection of an influenza virus.

CONCLUSIONS

In this report, we show an interesting case of a patient, registered in Republic of Bulgaria, who died from a very rare complication after viral influenza infection, i.e., acute hemorrhagic necrosis of the pancreas.

REFERENCES

1. Capua I, Mercalli A, Pizzuto MS, Romero-Tejeda A, Kasloff S, de Battisti C, et al. Influenza A viruses grow in human pancreatic cells and cause pancreatitis and diabetes in an animal model. *J Virol*. 2013;87(1):597-610.
2. Wiwanitkit V. *Bird Flu: The New Emerging Infectious Disease*. New York: Nova Publishers; 2008.
3. Sheikh I, Kanwal A, Kyprianou A. The role for prudence before describing novel infectious etiologies for acute pancreatitis. The experience of one institution before describing influenza B pancreatitis. *J Periodontol Online*. 2011;12(3):247-9.

4. Blum A, Podvitzky O, Shalabi R, Simsolo C. Acute pancreatitis may be caused by H1N1 influenza A virus infection. *Isr Med Assoc J*. 2010;12(10):640-1.
5. Baran B, Karaca C, Soyer OM, Lacin S, Demir K, Besisik F, et al. Acute pancreatitis associated with H1N1 influenza during 2009 pandemic: A case report. *Clin Res Hepatol Gastroenterol*. 2012;36(4):e69-70.
6. Rodríguez Schulz D, Martínez A, Guzmán MB, Robledo H, Capocasa P, Martínez L, et al. Severe acute pancreatitis and infection by influenza A (H1N1) virus in a child: Case report. *Arch Argent Pediatr*. 2015;113(4):e215-8.
7. Habib A, Jain A, Singh B, Jamshed N. H1N1 influenza presenting as severe acute pancreatitis and multiorgan dysfunction. *Am J Emerg Med*. 2016;34(9):1911.e1-2.

Funding: None; Conflict of Interest: None Stated.

How to cite this article: Baltov M, Bivolarski I, Tsranchev I, Gulinac M, Dineva P, Ivanov G. A rare case of death from acute hemorrhagic necrosis of the pancreas after influenza infection. *Indian J Case Reports*. 2017;3(4):235-237.