CASE REPORT

Natural or Unnatural Death in COVID-19 Pandemic? A Case Report

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ABSTRACT

More than 90% of deaths are considered to be natural deaths, but there are some cases where the cause is not yet certain. In doubtful cases, an autopsy is required. In the COVID-19 pandemic, forensic experts must wear personal protective equipment to prevent the transmission of the virus or other diseases from corpses for autopsy.
In this case report, on May 30th, 2020, a 40-years-old man was taken by his family to the hospital. Based on the doctor's examination, the man was dead when he arrived at the Emergency Room. Doctors found bruises on his cheek and left eyelid. The police conducting the crime scene examination was not sure whether the bruises were due to repeated falls or due to a crime. Therefore, an autopsy was done even in the COVID-19 pandemic to ensure whether the cause of death was natural or unnatural.

Keywords: Natural death, Autopsy, COVID-19

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INTRODUCTION

Natural death is any mortality caused by natural causes (old age and disease) instead of violence or accident. More than 90% of deaths in the world are considered to be natural, but there is a "gray area" where disease and violence can be found at the same time. Therefore, an internal examination (autopsy) of the corpse must be carried out to determine the cause of death.

Every death is considered an unnatural death until it is proven that it is, in fact, natural. Due to the current COVID-19 pandemic, every death will be handled carefully and with adequate protection. The forensic experts who perform an autopsy must wear complete Personal Protective Equipment. This is carried out to prevent the transmission of COVID-19 or other diseases from the corpse.

In this case report, it was found that there were bruises on a man's face with a history of illness three weeks before his death. The bruises raised suspicions that his death occurred due to violence. On the other hand, the man's death occurred during the COVID-19 pandemic. It becomes a challenge for forensic experts to prove whether there was a correlation between the bruises and his death and whether there was a correlation between his deaths and COVID-19.

CASE REPORT

On May 30, 2020, a 40-years-old man was taken by his family to a hospital. By the doctor who conducted the examination, the man was pronounced dead when he arrived at the Emergency Room. The doctor found bruises on his cheek and left eyelid. According to his family, the man was sick for three weeks with weakness on his left leg, speaking difficulty, weight loss, and often fell with his head hitting objects around him. However, they did not go to the hospital before because they were afraid of COVID-19 transmission.

The police who carried out the crime scene was not sure whether the bruises on the man's face were caused by falling or because of crime. Therefore, they requested for an internal examination (autopsy) of

the corpse to the Forensic Installation of Dr. Soetomo Hospital with a Request for Visum et Repertum number VER/A/26/V/2020/SPKT.

External examination revealed dilated blood vessels in the mucous membrane of the upper and lower eyelids of both eyes. The fingertips and nails of both hands appeared bluish. Bruises were found on the forehead, cheek, and left eyelid. Small abrasions were found on the nose, lips, left arm, and left leg. Internal examination revealed blood absorption in the scalp of the left and back head, but no blood absorption was found in the bone. The brain surface revealed blood vessel dilatation. A little blood absorption was found in the white area in the right hemisphere of the brain. Blood vessels at the brain base were ruptured and blood absorption was found at the skull base. Bones that formed the roof and base of the skull were intact, and there were no fractures found.

Laboratory examination results supporting histopathology revealed bleeding on head muscles, and congestive dilations of blood vessels were found in the brain, liver, and kidneys blood vessels. SARS CoV-2 examination through the PCR test was undetectable (negative).

Figure 1 : Bruises on the left cheek and eyelid.

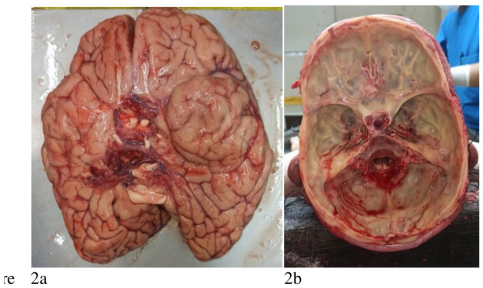

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Figure 2a & 2b : Blood vessels at the brain base were ruptured and blood absorption was found at the skull base.

DISCUSSION

A head injury might damage the organs inside it and become the leading cause of death in individuals under 40 years of age. The most common causes are traffic accidents, physical assaults, falls, etc. Bruising is the most common manifestation of injury and most head injuries are usually accompanied by other organ injury or multiple traumas (1).

Blunt force to the head might injure the scalp, skull, brain membranes, and tissues, where the injuries are in accordance to where the force was given. The scalp is the first protection against trauma by absorbing and reducing trauma effects. Morphological signs of scalp, skull, and brain injury might be useful to identify instruments and modalities of injury (2).

The brain resides inside the skull and receives its blood supply from the heart through the internal carotid artery and vertebral artery. After passing through the skull, the right and left vertebral arteries are joined and form the basilar artery. Furthermore, the internal carotid artery and basilar artery anastomose as a circle at the brain base and forms “Circulatory of Willis”. The middle cerebral artery is the most often blocked artery during stroke (3).

Stroke is a condition caused by the sudden disruption of blood flow to the brain due to clogged or ruptured blood vessels, causing brain cells to experience death. This results in neurological deficits and superior cortical function disturbances such as memory, orientation, concentration, language, motoric, and sensory. Clinical manifestations depend on the brain area that is affected. Stroke is the leading cause of disability and the second leading cause of death in the world, with 113 million disabilities in 2013 and 5.5 million deaths in 2016. Based on statistics in the United States, about 800,000 people have a stroke every year and 140,000 deaths (4).

Based on age, strokes occur frequently in the 6th and 7th decades of life. However, stroke might occur at a younger age (<45 years) with hypertension as the most common risk factor followed by diabetes and smoking. Based on gender, stroke incidence is more common in males than females, at the same age level (4).

Ischemic stroke is more common than hemorrhagic stroke, with a ratio of 88%:12%. In ischemic stroke, atherosclerotic plaque damages blood vessels and

forms blood clots, resulting in narrowing/blockage of blood vessels. If these blood clots break off and travel through the circulatory system, they can block smaller blood vessels, resulting in hypoxia and brain tissue infarction. Meanwhile, hemorrhagic strokes occur due to artery rupture, both inside and around the brain, which cut off blood supply to brain tissue and cause infarction (5).

In this report, blood absorption in the scalp of the left and back head was found. There were no signs of violence on the skull, membranes, and parenchyma of the brain. A little blood absorption in the white area of the right hemisphere brain and rupture of blood vessels at the brain base confirmed the cause of death of this man which was due to hemorrhagic stroke. In correlation to COVID-19, this death occurred during the pandemic. This causes the COVID-19 to be suspected as the cause of his death as well. COVID-19 is a viral infectious disease that attacks the lungs and other organs through droplets, aerosols, and exposed objects. Therefore, the handling of every corpse during the COVID-19 pandemic must be done with adequate protection and care. However, in this case, the suspicion that COVID-19 caused the death was not proven.

From the medicolegal aspect, police might request assistance from forensic experts to carry out an internal and external examination of the corpse, in which the forensic experts will write the examination results in Visum et Repertum (KUHAP Article 120 paragraph 1, Article 179 paragraph 1, Article 133 paragraph 2, Article 184).

CONCLUSION

The man under autopsy, in this case, experienced a natural death due to a disease caused by a ruptured blood vessel at the base of the brain and the death has no correlation with COVID-19.

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