Unusual findings in a case of suicide with a gas weapon

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Summary. Case report on a suicide with a gas pistol loaded with 8 mm blank cartridges. A 58-year-old male shot himself in the right temple and then in the back of the neck. The contact shot wounds showed large wound cavities with interspersed powder particles. The soft tissues were injured solely by the pressure of the exploding powder. Death was due to an air/gas embolism in the right ventricle of the heart.

Key words: Gas weapons — Starter pistols — Air embolism

Introduction

The danger of shots fired at close range or contact shots with gas weapons and starter pistols loaded with blank cartridges (calibre 8 or 9 mm) is well known [e.g. 3, 6, 10–12]. Most of the reported fatalities due to gas weapons are suicides. In addition to findings normally associated with this type of suicide this case shows an unusual injury pattern which, at first sight, would lead to surprising indications as to the cause of death.

Case history

A 58-year-old male was found by his wife lying dead in the left-sided position on a sofa in his apartment. The face as well as the head hair were covered with dried blood. There were extensive blood stains around the head and on the pillow and both hands were also covered with blood. There was a wound in the right temple and another wound in the back of the neck where the barrel of a gas pistol (ME 8 Detective, 8 mm) was found inserted approximately 2 cm into this open wound. One used cartridge case was jammed in the cartridge ejector, another used cartridge case was lying under the body on the sofa. There were blood spots spread over the wall behind the sofa covering an area of 170 × 100 cm.

There were no signs of a fight and the apartment door was locked. According to his wife and daughter the man had been suffering from depression but a suicide note was not found.

Autopsy findings

On the body, 2 contact shot wounds were found: a cross-shaped rupture wound in the right temple with a wound cavity underneath (Fig. 1). This wound extended as far as the temporal bone, which was not injured. The arachnoidea underneath the temporal bone showed small superficial haemorrhages. The wound also extended to the soft tissues of the cheek, and the mucous membranes of the mouth showed superficial ruptures, petechiae, and haemorrhages near the uvula and in the palate.

The second shot wound was in the middle of the back of the neck (Fig. 2) and 1 cm above this round contact shot wound the skin of the neck was ruptured tangentially for 9 cm. At first sight it looked like a cut but under the operating microscope the margins of this wound were irregular. The barrel of the gas pistol remained inserted in this wound. Within this wound, which was filled with powder soot, the neck muscles were ruptured and the wound cavity extended to the upper cervical vertebral column (Fig. 3). The vertebrae of the neck as well as the skull were not injured. There were small petechiae in the medulla oblongata. The base of the cerebellum (Fig. 4) and the corresponding parts of the dura showed small haemorrhages.

Both injuries were filled with large quantities of interspersed propellant powder particles. Projectiles or metal fragments were not found and the X-ray results were also negative.
Fig. 1. The right temple with a cross-shaped contact shot wound. Underneath there was a wound cavity reaching down to the temporal bone

Fig. 2. The middle of the back of the neck with a round contact shot wound. Above the skin is ruptured laterally for 9 cm, and the barrel of the gas pistol was found inserted into this wound

Fig. 3. Sagittal cut through the cervical vertebral column with parts of the base of the skull. The upper neck muscles are ruptured in a funnel-shaped manner. In the dura at the foramen magnum there are some petechiae

Fig. 4. The base of the cerebellum with small haemorrhages

Under the microscope both wounds showed no signs of a wound reaction. Together with the findings at the scene this indicated that very little time had elapsed between the first shot and the time of death. As a sign for a moderate loss of blood, the livores mortis showed a nearly regular intensity, and the internal organs were slightly pale. There were gastric contents in the pharynx, the trachea, and some bronchial tubes (terminal aspiration) and the stomach contained 400 ml fluid.

The cause of death was due to an air/gas embolism in the right ventricle of the heart. At the autopsy the thoracic wall was opened and when the pericardium was filled with water, the heart ascended to the surface. The heart was opened with a scalpel in situ under water and many large bubbles were seen to leave the right atrium and ventricle. Due to technical reasons this gas was not measured in quantity or identified by a gas analysis (air?, powder gas?). The source of the air/gas embolism was the many