H58 A Mercury "Bullet" at Autopsy

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After attending this presentation, attendees will understand how to better identify exploding ammunition from regular ammunition, emphasizing the importance of the autopsy examination with adjunct toxicology to determine the manner and cause of death when multiple possible methods for a suicide attempt have been used.

This presentation will impact the forensic science community by demonstrating an autopsy of an individual with unique findings which have not previously been described in scientific literature. This presentation will expand the understanding as well as the identification of exploding ammunition involving mercury as it impacts the human body. This presentation will provide a better appreciation of ammunition identification and toxicology testing as adjunct investigative tools.

Contrary to other methods that result in much lower case fatalities, firearm suicides continue to increase in the United States. Though suicides can be impulsive, the lethality of the method selected can be a critical determinant of whether the attempt is fatal or not.[1] Suicide in which multiple methods are used are uncommon, but not rare, accounting for 1.5%-5% of all suicide cases.[2] Defined as the application of more than one mechanism of death, a complex suicide (either planned or unplanned) ensures a fatal outcome.[2] The possibility of exploding handgun ammunition for civilian use necessitates an understanding of the diagnostic features as well as the characteristics of such ammunition. As the majority of suicide cases result from firearms, forensic pathologists should be cognizant of exploding bullets and consider their effects in future cases.

In this case study, a 62-year-old man initially appeared to have committed suicide via a gunshot wound to the abdomen. At time of autopsy, postmortem radiographs were taken to document the location of the projectile. Despite only one gunshot wound present on the external examination of the body, two apparent projectiles appeared on the radiograph. After the internal examination, what was thought to be the second bullet was in fact a spherical glob of liquid mercury. Closer examination of the radiograph showed minute pellets of mercury throughout the large and small intestine. In order to determine if the mercury had been ingested or was part of a mercury-altered exploding projectile, blood was tested for mercury levels. Blood levels of mercury were 33mcg/L with the normal range being less than 10mcg/L.

Exploding ammunition when fired projects a small group of missile fragments to the target, but do not result in greater tissue damage.[3] Thus, exploding ammunition is anatomically indistinguishable from conventional ammunition. Identification relies on the forensic pathologist's ability to identify both a primer cup and anvil in a radiograph and/or during the internal examination so that the necessary safety precautions can be taken.

Although the cause of death may appear clear prior to autopsy, this case study demonstrates the importance of a complete autopsy and of a forensic pathologist being familiar with the identification and understanding of the various types of ammunition currently available and their effects on the human body. In addition, this case highlights another case of suicide in which at least two methods were attempted.

Reference(s):

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3. Clark, M.A., Smith, T.D., Fisher, R.S. Russian roulette with an exploding bullet. *American Journal of Forensic Medicine and Pathology*. 1981: 2: 167-169

Mercury, Bullet, Suicide

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