H36 Death From Pheochromocytoma Initially Presenting as a Suspected Homicide

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Learning Overview: After attending this presentation, attendees will be aware of the importance of performing autopsies in all cases of suspected homicide. Also, this case will provide an additional example to the forensic literature of a natural death that initially presented as a suspected homicide.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by demonstrating that a natural death, in this case, one related to a pheochromocytoma in conjunction with postmortem animal activity and suspicious scene findings, can mimic homicidal violence.

Introduction: One of the most important aspects of medicolegal death investigations involves the examination and documentation of homicidal deaths. Appropriate evaluation of such cases, including evidence collection, may have far-reaching implications for subsequent adjudication. In this report, the case of a suspicious death which, after complete investigation and autopsy, was determined to be caused by a pheochromocytoma is presented.

Case Report: A 66-year-old man was found unresponsive by Emergency Medical Services (EMS) at his residence in an isolated pole barn. After confirming the man was deceased, the on-scene police officers immediately labeled the death suspicious, as initial signs indicated violence had occurred, with evidence of a significant injury on the decedent's head and multiple guns and power saws at the scene. Additionally, skin and flesh were noted to be missing from the decedent's left ring finger and middle finger. Mice were noted to be present within the barn. Medical history, provided by the decedent's friend who called 911, revealed that the patient had complained of flu-like symptoms in the week prior to his death. Upon further investigation, most of the head injuries appeared to be consistent with postmortem rodent feeding, with no lethal injuries identified. Autopsy revealed a 7cm, mostly solid mass in the right adrenal medulla, as well as a markedly enlarged heart (750g), with coronary artery atherosclerosis, and kidney findings consistent with hypertension. Adrenal tumor cells stained positive for chromogranin A, synaptophysin, and neuron-specific enolase, confirming the diagnosis of pheochromocytoma. The cause of death was hypertensive and atherosclerotic cardiovascular disease, with a contributing factor of an underlying pheochromocytoma. The manner of death was natural.

Discussion: The full investigation and autopsy in this case highlight the importance of considering rare diseases as potential causes of death. While adrenal pheochromocytoma may be classified as a rare disease, nearly 50% of pheochromocytomas are first diagnosed at the time of autopsy.[1] The other half tend to be discovered incidentally. Pheochromocytomas are tumors that arise from the chromaffin cells of the adrenal medulla. While they are usually benign, these tumors can often secrete excess levels of catecholamines, such as epinephrine and dopamine, causing a wide range of adverse effects. Diagnosis is complicated by the wide range of non-specific, sometimes hidden, clinical symptoms. One of the hallmark symptoms of a pheochromocytoma is hypertension. The clinical triad widely used to suspect these tumors consists of headache, palpitation, and diaphoresis. Pheochromocytomas may also present with anxiety, chest pain, dyspnea, nausea, and vomiting. Such symptoms are common in a wide range of diseases and tend to broaden the differential. From a forensic perspective, this case represents an example of a natural death that initially presented as a homicide. While both accidental traumatic and natural deaths initially presenting as homicides have been reported in the forensic literature, such cases are uncommon and often puzzling. Only via cooperative efforts between law enforcement and death investigators, along with a detailed postmortem examination, can homicide be conclusively ruled out and the true nature of the death be recognized.

Conclusion: This case initially presented as a suspected homicide due to traumatic postmortem animal activity; however, the true cause of death was related to an underlying pheochromocytoma. This case serves to educate forensic professionals and law enforcement officials that natural deaths can occasionally be mistaken as homicides. This case also serves to raise awareness in the medical community of the variable clinical presentation of pheochromocytomas as well as the disease's sometimes silent nature.

Reference(s):

1. Mannelli M., Lenders J.W., Pacak K., Parenti G., Eisenhofer G. Subclinical phaeochromocytoma. *Best Pract Res Clin Endocrinol Metab*. 2012;26(4):507-15.

Pheochromocytoma, Sudden Death, Suspected Homicide

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