

# Implications of Coronary Artery Disease Led Sudden Death for Forensic Pathology

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## Abstract

Forensic pathology is the branch of pathology that deals with the investigation of sudden, unexpected, or suspicious deaths. In cases of sudden death due to CAD, forensic pathologists play a crucial role in determining the cause and manner of death. They do this by performing a thorough examination of the body, including an autopsy (a medical examination of the body after death) and laboratory testing. CAD-related sudden death is an important area of focus for forensic pathology, and accurate diagnosis and investigation of these cases is crucial for ensuring justice and understanding the public health implications of this common cause of death. There are several implications of CAD-related sudden death for forensic pathology. First, it is important for forensic pathologists to accurately diagnose CAD as the cause of death, as this information can have significant legal and social consequences. For example, if CAD is found to be the cause of death, it may be necessary to determine whether the deceased had any known risk factors for the condition (such as high blood pressure or high cholesterol) and whether they were receiving appropriate treatment. Second, forensic pathologists may need to investigate whether CAD-related sudden death was preventable. This could involve examining whether the deceased had access to medical care and whether they were receiving appropriate treatment for their condition. Finally, forensic pathologists may be called upon to testify in court about their findings in CAD-related sudden death cases. This may include explaining the medical and scientific evidence to a jury, and helping to clarify any technical or complex issues related to the case. This review analyses forensic aspects of coronary artery disease led sudden deaths.

**Keywords:** Blunt object • Head trauma  
• Clinical forensic assessment

## Introduction

Heart disease is the leading cause of death in developed countries. Coronary artery atheroma, or the build-up of plaque in the coronary arteries, is the most common cause of death that forensic pathologists encounter in western societies and is also the leading cause of sudden death. In the United States, someone dies from coronary artery disease every 39 seconds. The forensic pathologist's job is to determine the cause and manner of death, and in some cases, present their findings in legal proceedings. In cases where coronary artery atheroma is the primary finding, the cause of death is usually clear, but the manner of death (natural, accident, suicide, homicide, or undetermined)

may still need to be determined. Factors that may be considered in these cases include the timing of the event, the presence of drugs, the role of exertion, stress, and trauma, and the setting of the death (such as in a young athlete or during transportation). The pathology of coronary artery disease is typically established by identifying stenosing atheroma and its complications, but other conditions such as arteritis, embolization, and dissection may also be present in sudden deaths. Sudden death may also be caused by anomalous coronary artery circulation [1,2].

## Literature Review

### Is coronary artery disease the cause of death?

Many deaths will show evidence of coronary artery disease, or the build-up of plaque in the coronary arteries, at autopsy. Coronary artery atheroma or similar terms such as atherosclerotic cardiovascular disease will often be listed as the cause of death [3]. If there is a rupture of a myocardial infarct (heart attack), it is clear that the rupture was the cause of death. However, in other cases, there may be less evidence of an acute event, and more investigation is needed to determine the cause of death. In these cases, the problem of determining when coronary artery disease contributed to or caused the death becomes more complex [4].

### Dating myocardial infarction

Acute infarction, or tissue death, is not commonly identified in sudden deaths at autopsy. While scarring from previous infarctions may be present, the same issues of determining the role of stable coronary artery disease apply. The presence and severity of the disease may be sufficient to cause the death or may just be coincidental. Histological changes can be used to determine the age of the infarction. Much effort has been devoted to identifying myocardial infarction before changes are visible with the use of haematoxylin, a dye used in microscopy [5,6].

### Coronary artery disease and drugs of abuse:

There is a significant body of research on the relationship between the use of stimulants, particularly cocaine, and the development of coronary artery disease and myocardial infarction. After using cocaine, there is a higher risk of experiencing a myocardial infarction, even in the absence of other risk factors. The cause of myocardial infarction in these cases is thought to be due to coronary artery spasm or the stimulant effects of cocaine. Cocaine use has also been linked to the development of coronary artery disease and the occurrence of sudden death [7-9].

### Coronary artery disease and stressful events

Forensic pathologists may be asked to examine individuals who have died during a physical struggle or other stressful event. These cases can be complex and may lead to criminal charges or civil litigation. Stressful events, including major life stressors, can trigger acute coronary syndromes, which are a group of symptoms caused by a sudden decrease in blood flow to the heart. Epidemiological studies have examined the relationship between stress and acute coronary syndromes [10].

## Conclusion

In order to determine if a death was caused by coronary artery disease, a pathologist must examine the degree of stenosis (narrowing) in the coronary arteries. If there is evidence of acute thrombosis (blood clot), bleeding in the plaque, or infarction (tissue death) in the heart muscle, it is highly likely that the cause of death was ischemic heart disease caused by the build-up of plaque in the coronary arteries.

However, it is also possible that the ultimate cause of death was due to other consequences of the atheroma (plaque) in the coronary arteries

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## Conflicts of Interest

The authors declare that they have no conflicts of interest.

## References

1. Flannery, F., et al. "Homicide by fright: the intersection of cardiology and criminal law." *Am j cardiol.* 105.1 (2010): 136-138.
2. Lecomte, D, et al. "Stressful events as a trigger of sudden death: a study of 43 medico-legal autopsy cases." *Forensic sci int.* 79.1 (1996): 1-10.
3. Mittleman, M., and Siscovick D. "Physical exertion as a trigger of myocardial infarction and sudden cardiac death." *Cardiol clin.* 14.2 (1996): 263-270.
4. Meisel, Simcha R., et al. "Effect of Iraqi missile war on incidence of acute myocardial infarction and sudden death in Israeli civilians." *Lancet* 338.8768 (1991): 660-661.
5. Kloner, R. et al. "Population-based analysis of the effect of the Northridge Earthquake on cardiac death in Los Angeles County, California." *J Am Coll Cardiol.* 30.5 (1997): 1174-1180.
6. Trichopoulos D, et al. "Psychological stress and fatal heart attack: the Athens (1981) earthquake natural experiment." *Lancet* 321.8322 (1983): 441-4.
7. Steinhauer J., and Caulfield, J.B. "Spontaneous coronary artery dissection associated with cocaine use: a case report and brief review." *Cardiovasc Pathol.* 10.3 (2001): 145.
8. Darke S, et al. "Cocaine-related fatalities in New South Wales, Australia 1993–2002." *Drug Alcohol Depend.* 77.2 (2005): 107-114.
9. Finkel J B., and Marhefka G. "Rethinking cocaine-associated chest pain and acute coronary syndromes." *Mayo Clin Proc.* 86. 12. Elsevier, (2011).
10. Dressler, F et al. "Quantitative analysis of amounts of coronary arterial narrowing in cocaine addicts." *Am j cardiol.* 65.5 (1990): 303-308.