



## H61 Intramyocardial Lipoma of the Right Atrium: Two Cases Diagnosed at Forensic Autopsy

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**Learning Overview:** After attending this presentation, attendees will be aware of the possible effects an intramyocardial lipoma may have on a patient and the associated risks.

**Impact on the Forensic Science Community:** This presentation will impact the forensic science community by increasing suspicion of the role of a lipomatous tumor in accelerating death in correlation to external factors.

Lipomatous tumors of the heart are rare, usually asymptomatic entities that typically present as incidental findings at autopsy. A few case reports describe presenting symptoms such as dizziness and shortness of breath; it is estimated that approximately 17% of all patients with cardiac tumors exhibit neurological symptoms.<sup>1</sup> Intramyocardial lipomas are most commonly found in the right atrium and the left ventricle.<sup>2</sup> Both atrial and ventricular lipomatous tumors are typically incidental findings on echocardiogram; Magnetic Resonance Imaging (MRI) can be used to better characterize the fat stranding, density, size, and location, while biopsies can be performed to rule out malignancy. Two unrelated decedents with right atrial intramyocardial lipomatous tumors were first identified at forensic autopsy.

A 70-year-old moderately obese man with a history of peripheral vascular disease, emphysema, and essential hypertension was pronounced dead in the emergency room following an altercation in his home. He had recently developed symptoms of irregular heartbeat and sweating episodes; thyroid function testing was planned. He had also developed forgetfulness and disordered thought processes. Autopsy corroborated the medical history, showed evidence of dementia, and documented an intramyocardial lipoma in the right atrium measuring 3.2 x 2.4 x 2.0cm. The lipoma was located in the upper margin of the fossa ovalis between the inferior vena cava and the superior vena cava, and displaced atrial muscle; it did not reach the crista terminalis. Death was attributed to external factors.

A 55-year-old ill-appearing woman, found dead in her bed, with a history of hypertension, was suspected to have died of a drug overdose; although no drug paraphernalia was found at the scene, she had an antecubital ecchymosis and a possible dermal puncture in each antecubital fossa. Her heart demonstrated significant concentric left ventricular hypertrophy, with four-chamber dilatation, and a 3 x 5cm right atrial intramyocardial encapsulated lipomatous tumor. The tumor extended from the area adjacent to the superior vena cava down to the auricle and into the anterior and right anterolateral atrial wall, sparing the septum.

**Discussion:** Primary cardiac tumors are rare, with an autopsy incidence of 0.001% to 0.03%; only 25% of them are found in the myocardium.<sup>2</sup> Intramyocardial lipomas may cause hemodynamic and electrical conduction changes, resulting in arrhythmias that may cause sudden death; approximately 0.0025% of sudden cardiac deaths are estimated to occur from primary cardiac tumors.<sup>3</sup> A few reports describe intramyocardial lipomas that were identified during life, after patients presented with shortness of breath, dizziness, and/or hypertension, which warranted an echocardiogram. All were successfully surgically resected; patients had a speedy recovery (approximately eight days in the hospital) and were asymptomatic/lipoma free for follow-ups recorded from one to four years post operation. Prompt diagnosis of primary cardiac tumors and surgical resection has often led to complete cures; surgery with a minimally invasive approach offers a low-risk procedure with an excellent long-term prognosis approaching 100%.<sup>2</sup>

In the current study, one decedent's symptoms of irregular heartbeat and sweating episodes were attributed to probable thyroid disease. Emphysema may have masked dyspnea, and dementia may have interfered with diagnosis of neurological symptoms. In the second case, a lipoma might have accelerated hemodynamic compromise under conditions of drug-related hypoxia. In both cases, it was unclear whether the lipoma played a contributing role in death through vulnerability to arrhythmia. Both of these cases support the literature favoring surgical excision of intracavitary or intramyocardial lipomatous tumors to decrease the risk for antiarrhythmic firing or sudden death; if such a tumor is encountered at forensic autopsy, consideration should be given to its possible role in the mechanism of death.

### Reference(s):

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2. Wang H., Hu J., Sun X., Wang P., Du Z. (2015). An asymptomatic right atrial intramyocardial lipoma: A management dilemma. *World Journal of Surgical Oncology*, 2015; 13:20.
3. Pêgo-Fernandes P.M., Costa P.L.G., Fernandes F.B., et al (2003). Right atrial lipoma [E Gandour SMC, translator]. *Arquivos Brasileiros de Cardiologia*, 80(1), 1-6.

### Lipomatous Tumor, Right Atrium Intramyocardial Lipoma, Forensic Autopsy