H100 Conduction Disruption: A Rare Case of Sudden Death as the Initial Presentation of Metastatic Renal Cell Carcinoma

Stacey L. Reed, DO, 9500 Babcock Boulevard, Apt 54, Allison Park, PA 15101; Candice Brem, MD, Allegheny General Hospital, 320 E North Avenue, Pittsburgh, PA 15212; Farshaad Bilimoria, MD, 10 Allegheny Center, Apt 224, Pittsburgh, PA 15212; Pradeep Sethi, MD, Allegheny General Hospital, 320 E North Avenue, Pittsburgh, PA 15212; and Todd Luckasevic, DO, Allegheny County Medical Examiner's Office, 1520 Penn Avenue, Pittsburgh, PA 15222*

After attending this presentation, attendees will be aware of a rare case in which renal cell carcinoma metastasized to the interventricular septum after an extended interval, without atrial or vena caval involvement, disrupting the electrical conduction system and resulting in sudden death.

This presentation will impact the forensic science community by demonstrating an unusual case in which the initial presentation of metastatic renal cell carcinoma from a remote prior malignancy manifested as sudden death.

Introduction: Renal cell carcinoma is known to metastasize to the heart, most often occurring as transvenous extension via the inferior vena cava and typically involving the right atrium.[1] It is exceptionally rare for metastases to occur in the left ventricle or interventricular septum without right heart involvement, as this suggests hematogenous spread rather than direct extension. Only a few case reports exist of interventricular metastases.[2-4] Here, an unusual case is reported in which the initial presentation of metastasis from a remote history of renal cell carcinoma was discovered upon autopsy.

Materials and Methods: The decedent was a 66-year-old Caucasian gentleman with a history of renal cell carcinoma, status post-nephrectomy 17 years prior, who presented to the emergency department for evaluation of two recent episodes of substernal chest pain. Electrocardiogram examination demonstrated normal sinus rhythm with few premature atrial contractions, and an echocardiogram revealed a dilated left ventricle with possible wall motion abnormalities, but no evidence of intracavitary masses. Cardiac catheterization demonstrated only mild to moderate atherosclerotic disease. The patient was treated for coronary vasospasm and was discharged after two days with nitroglycerin for use as needed. Hours later, he experienced an unwitnessed cardiac event, and despite extensive cardiopulmonary resuscitation with multiple rounds of defibrillator shocks and intravenous epinephrine, he was pronounced dead.

Results: An unlimited autopsy revealed widespread involvement by firm, well-circumscribed white nodules within the lungs, liver, right kidney, and lesser omentum. There were also two similar nodules within the interventricular septum of the heart, measuring 1.0cm and 0.4cm in greatest dimension. Histologically, all nodules were consistent with metastatic clear cell renal cell carcinoma. Sectioning the coronary arteries revealed only mild to moderate atherosclerosis, and there was no evidence of acute or subacute myocardial infarction. The cause of death was thus attributed to disruption of the His-Purkinje conduction system by metastatic renal cell carcinoma, resulting in sudden cardiac arrest.

Conclusions: Few reports exist of renal cell carcinoma metastatic to the heart without involvement of the right heart. Reported here is an unusual case in which the initial presentation of widespread metastatic disease from a remote malignancy masqueraded as acute coronary syndrome, eventually resulting in sudden death.

Reference(s):

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