

A rare case of cardiac fibroma in a dead truck driver

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Abstract: We report the case of a 51-old truck driver who died by acute myocardial infarction as a result of a large size cardiac fibroma of the left ventricle. We also include some remarks about the etiology and the most favorable therapeutic strategy for the disease. The cardiac tumors are very rare and vary with age, which can be a clue for their correct diagnosis. The rhabdomyomas and fibromas are commonly seen in childhood while papillary fibroelastoma, mixoma and lipoma are more often found in adults. Cardiac fibroma is an extreme rare cardiac tumor. Its diagnosis is a challenging issue without immunohistochemistry. We used vimentin, desmin, muscle actin, CD34, S100 to proof the origin of this tumor. The second issue we rise is the superficial medical examination done periodically by professional drivers. According with the Bihor County Forensic Department records this is the only case of cardiac fibroma in the last 15 years.

Key Words: rare case, truck driver, cardiac fibroma, imunohistochemistry.

Primary cardiac tumors are very rare especially in adults. Most of them are found in children [1].

In children and infants, the most common cardiac tumor are rhabdomyomas and fibromas [2]. Fibromas are the second most common benign primary cardiac tumor after myxomas. Most fibromas are associated with Gorlin's syndrome in the adult population [3]. Basically fibroma is a benign connective tissue tumors derived from fibroblasts. The symptoms depend on the location of the tumor and include either sudden death or the development of cardiac failure. Most tumors that cause sudden death extend into the ventricular conduction system [3].

The prognosis may be influenced by its location, size and episodes of arrhythmias. The predominant clinical picture may be one of obstructive phenomena (obstructive cardiomyopathy type), heart failure (dilated cardiomyopathy type), or arrhythmias, which may be life threatening [4].

Primary cardiac tumors are uncommon, particularly in the adult population [1]. In different studies the frequency of cardiac tumors is 0.001-0.03% [5]. According with the Bihor County Forensic Department records this is the only case of cardiac fibroma in the last 15 years.

CASE REPORT

We present the case of a male patient, truck driver, 51 years old, found dead in its own truck near Borş custom, Bihor County, waiting in line to pass the Romanian-Hungarian border. The emergency system had been announced by one of his colleague, who discovered the dead driver.

The police has been announced. On the occasion of on-site research, in the cabin truck was found a handbag of a woman, which is why there has been suspicion for some maintenance intercourse with a female person with unknown identity. They also found two beer bottles of

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500 ml each. Later in the survey carried out by police has been identified a woman person has acknowledged her presence at the scene of the events and the consumption of alcohol. It has also been argued that, at the time that she left the cabin, the driver was aware of tyre, tired, and accused a fatigue and chest pain. His relatively young age and the fact that he was a professional driver, profession that involved periodic medical checkups did not suggest severe, preexistent organic pathologies.

AUTOPSY FINDINGS

Forensic autopsy was performed in order to explain the causes of death. Gross examination showed a bulky tumor left ventricle, associated with acute myocardial infarction. The tumor was identified in left ventricular myocardium, on the postero-lateral side. On the surface, beneath the pericardium was identified a white plaque (Fig. 1). On the bisected heart it was a rounded mass, white and whorled appearance. Tumor size was 6/5 cm, well circumscribed (Fig. 2). The left ventricular myocardium showed signs suggestive for an acute myocardial infarction.



Figure 1. White-tan area beneath epicardium.

Toxicological exams were negative. The causes of death were easy to identify: the bulky tumor induced a major ventricular arrhythmia and vascular disorders in the branches of coronary arteries leading to myocardial ischemia. The autopsy examination also showed extensive atherosclerosis and myocardial fibrosis.

The forensic autopsy showed that death was nonviolent.

METHOD

Histopathology aspects

The tumor was circumscribed but not encapsulated. The whole tumoral mass was paucicellular. Histology examination showed bland-looking spindle cells. (Fig. 3). The entire tumor was arranged in intersecting bundles. The cytoplasm of the cell is pale. The nuclei are blunt-elongated without evident nucleoli.

The tumor was characterized by wavy elastic fibers, without inflammation, calcification, necrosis, hemorrhage or mitosis (Fig. 4).

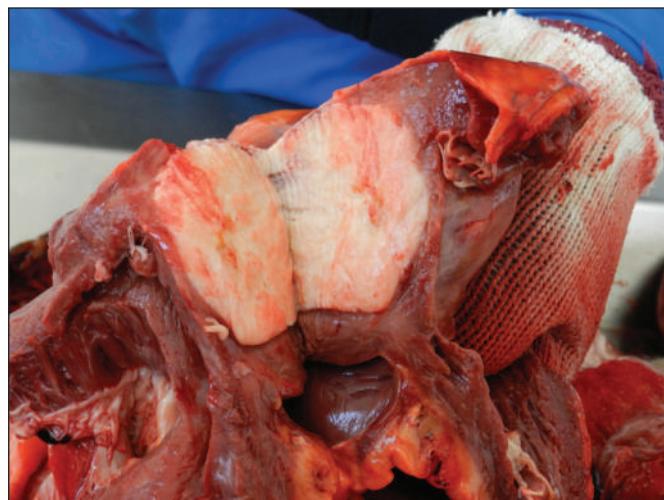


Figure 2. White round tumoral mass inside the left ventricle.

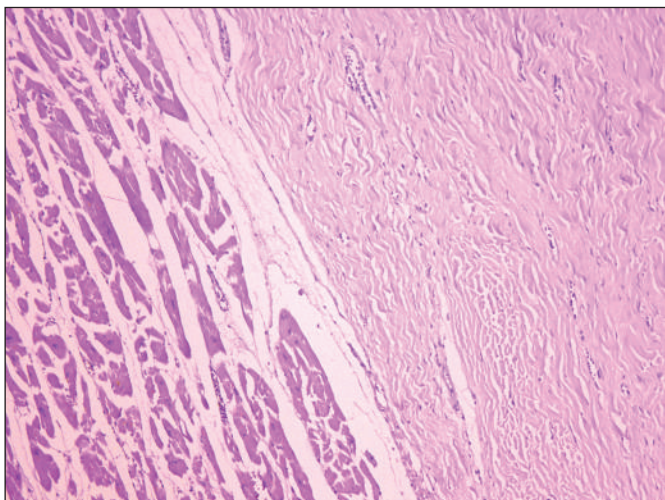


Figure 3. The myocardial muscle bundles in the left side and a pink fibrillar tumor in the right side 100X HE.

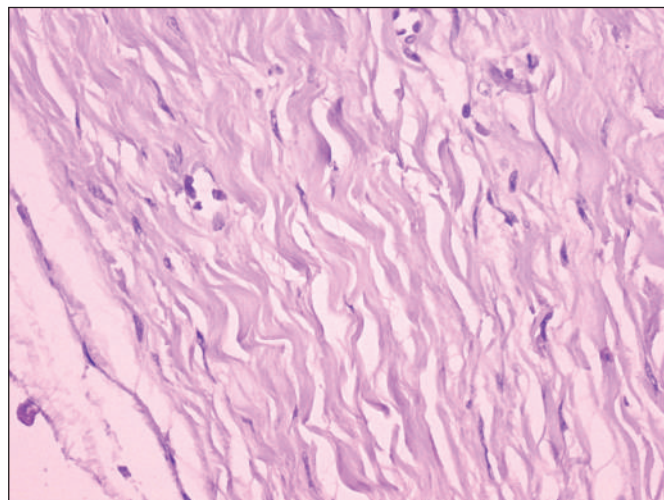


Figure 4. Cardiac fibroma; wavy fibre and few blood vessels 400X HE.

Immunohistochemistry

An immunohistochemical analysis was performed on 4 μm -thick sections prepared from formalin-fixed paraffin embedded tissue, by using an automated immunostainer (Bechmark XT, Ventana Medical Systems Inc., Tucson, AZ, USA). Immunohistochemical assays were performed on a Ventana Benchmark XT automated staining instrument according to the manufacturer's instructions. Slides were de-paraffinized using EZprep solution (Ventana Medical Systems, Inc.) at 90°C, and all reagents and incubation times were chosen as directed on antibody package inserts. Slides were developed using the OmniMap DAB (3,3'-diaminobenzidine) detection kit (Ventana Medical Systems, Inc.) and counterstained with Hematoxylin. We label the section with CD34 (BQEnd/10 clone), desmin (DE-R-11 clone), actin muscle (HUC1-1 clone), S100 (4C4.9 clone), vimentin (V9 clone) markers provided by Ventana Medical Systems, Inc. [6, 7].

Tumor cells expressed vimentin (Fig. 5). In the higher magnification(400X) can be seen a low stain profile of vimentin antibody suggesting that the tumor is more fibrillar and less cellular (Fig. 6). The muscle

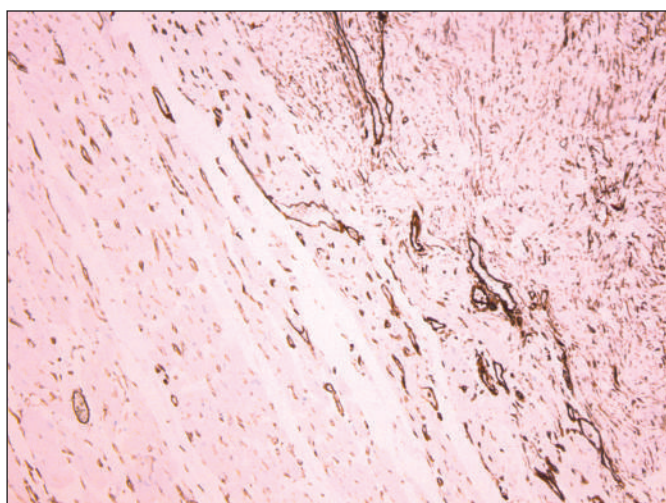


Figure 5. Immunohistochemistry; vimentin positive expression.

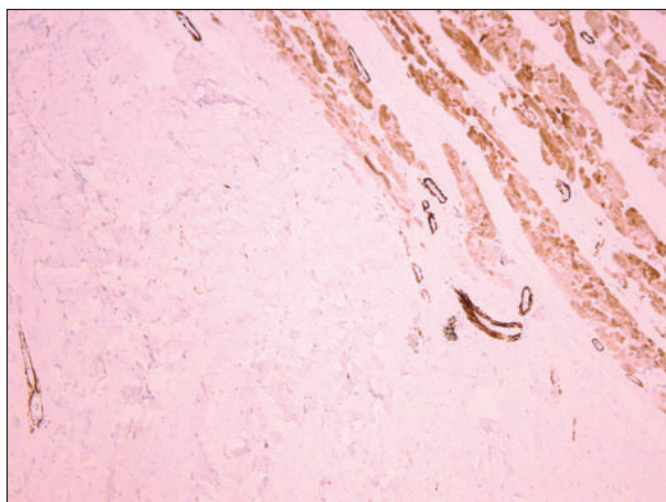


Figure 7. Immunohistochemistry; muscle actine negative expression.

actin expression was negative within the tumoral mass, but it highlighted the blood vessels walls (Fig. 7). The expression of desmin, which is a myogenic marker was negative. CD34 or S-100 protein were also negative.

DISCUSSION

The direct cause of death was acute myocardial infarction caused most likely by a giant benign tumor. From medical records study we found that regular medical examinations, required in this case, as a professional driver, have been done overlooked the pathology. No medical examinations showed pathological changes in the cardiovascular system.

This could raise question marks over the quality of the examinations carried out regularly to employees with a high risk jobs.

In this case the miss diagnosis could have generate tragedies with human losses.

Cellular fibromas are observed in infants during their first months of life, while fibromas in older patients contain large amounts of collagen.

The case we present is a rare cardiac primary

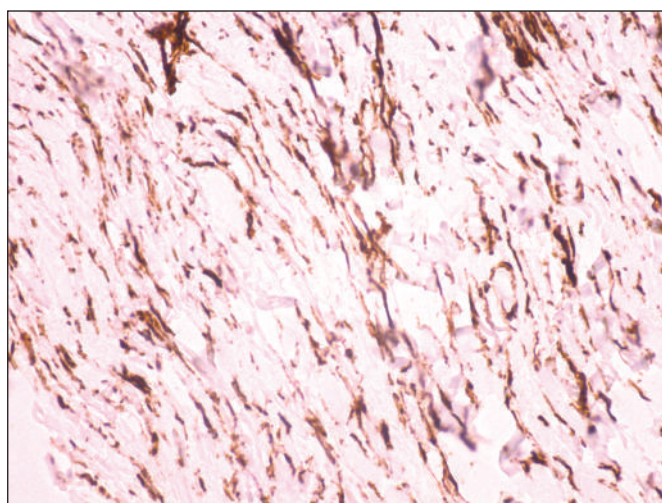


Figure 6. Immunohistochemistry; low stain for vimentin.

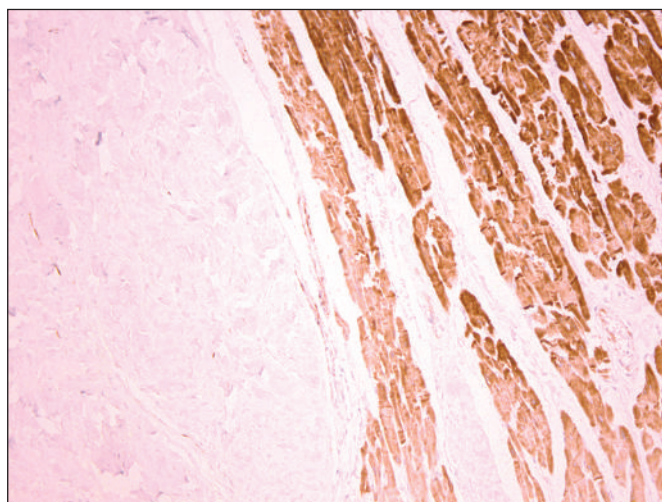


Figure 8. Immunohistochemistry; desmin negative expression.

tumor. The metastatic tumors of the heart are approximately 20 to 40 times more frequent than primary tumors [9].

Cardiac fibromas occur almost exclusively within the myocardium of the ventricles or ventricular myocardium or the inter ventricular septum. According to the WHO classification it is not clear whether cardiac fibroma is a hamartoma or a true neoplasm. Because most cases occur in infants and children it is possible to be congenital [10].

CONCLUSION

Cardiac tumors are rarely recorded during autopsy either medical or forensic.

This is the first cardiac fibroma found in last 15 years identified in Bihor County Forensic Department files.

The ancillary techniques like immuno-histochemistry is useful to get a correct diagnosis of the type of tumor and its malignancy.

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