

Sudden Cardiac Death in Hypertensive Heart Disease

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Background:

Hypertensive heart disease refers to changes in myocardial structure and function that result from sustained hypertension. The relationship between hypertensive heart disease and sudden cardiac death is well established but there are few pathological studies. We examined the clinical and pathological features of hypertensive heart disease in sudden cardiac death victims.

Design:

We investigated 5239 consecutive cases of sudden cardiac death referred to our national cardiovascular pathology centre between 1994 and 2018. Hearts were examined by an expert cardiac pathologist. Diagnostic criteria included increased heart weight and left ventricular wall thickness in the absence of other causes. Exclusion criteria were significant coronary artery disease and no premorbid diagnosis of hypertension.

Results:

Of 75 sudden cardiac death cases due to hypertensive heart disease (age at death: 54 ± 16 years; 56% male), 56 (75%) reported no prior cardiac symptoms. Thirty-four (45%) recorded a $BMI\geq 30$. Four (5%) were labelled with hypertrophic cardiomyopathy in life, but lacked the diagnostic feature of myocyte disarray at autopsy. The mean heart weight was 563 ± 153 grams (males 636 ± 140 , females 470 ± 114), with a maximal left ventricular wall thickness of 17.5 ± 3.5 mm. All hearts showed concentric hypertrophy. Fibrosis was present in 59 cases (81%) and was not associated with sex ($p=0.31$), BMI ($p=0.17$), or heart weight ($p=0.48$).

Results Table:

Demographic	Parameters	HHD (n=75)
Age	Mean \pm SD	54 \pm 16
	Range	18-85
Gender	Male	42(56%)
	Female	33(44%)
Ethnicity	White (British)	54(72%)
	White (Irish)	5(7%)
	White (other)	2(3%)
	Black (Caribbean)	2(3%)
	Black (African)	1(1%)
	Black (other)	1(1%)
	Unknown	7(9%)
Obesity		34(45%)
Diabetes		10(13%)

Chronic kidney disease	9(12%)
Cardiomyopathy/Hypertrophic Cardiomyopathy	6(8%)
Pregnancy	3(4%)
Died at rest or during sleep	60(80%)
Unknown	13(17%)
Died during emotional stress/assault	2(3%)
Breathlessness	17(23%)
Chest pain	4(5%)
Headache	3(4%)
Seizures	3(4%)
Palpitations	2(3%)
Vomiting/nausea	2(3%)
Syncope	1(1%)
Unknown Medication	49(65%)
Anti-hypertensive	21(28%)
None	5(7%)

Figure 1:

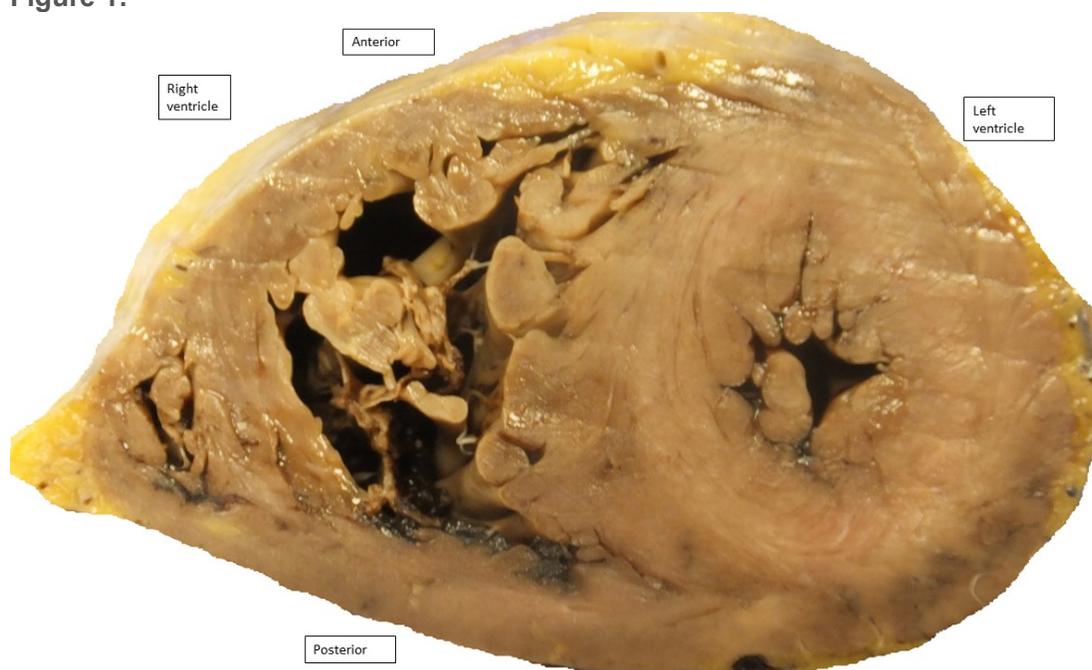
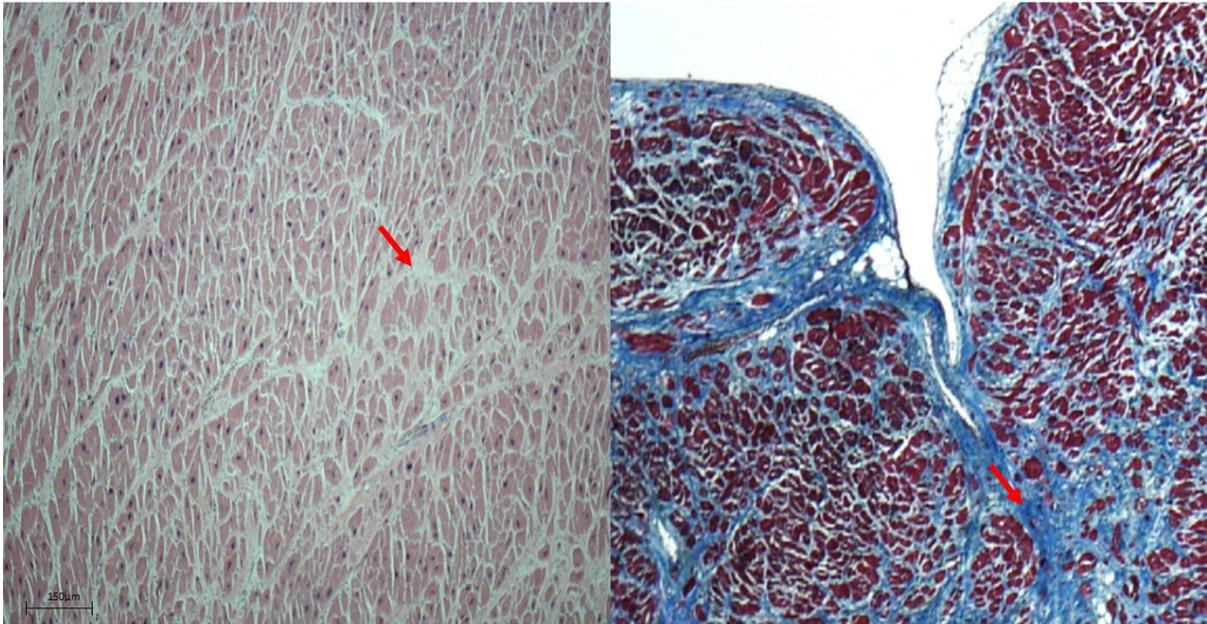


Figure 2:



Conclusion:

Most sudden deaths due to hypertensive heart disease occurred without prior cardiac symptoms so risk stratification is challenging. All cases exhibited concentric hypertrophy and myocardial fibrosis was frequently reported. Hypertensive heart disease should be excluded in those with left ventricular hypertrophy and hypertension prior to consideration of hypertrophic cardiomyopathy.