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BI 104

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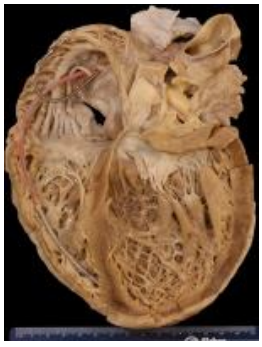
Consequences of Cardiomyopathy

Cardiomyopathy is a disease in which the myocardium of the heart becomes enlarged, thickened and stiff, the left ventricle is most often affected. This results in a lack of pumping ability which can lead to conditions such as arrhythmias and even heart failure. There are four major forms of cardiomyopathy, dilated or congestive cardiomyopathy, hypertrophic cardiomyopathy also known as asymmetrical septal hypertrophy or idiopathic hypertrophic subaortic stenosis, restrictive cardiomyopathy, and arrhythmogenic right ventricular cardiomyopathy. Each form of cardiomyopathy results in specific consequences.

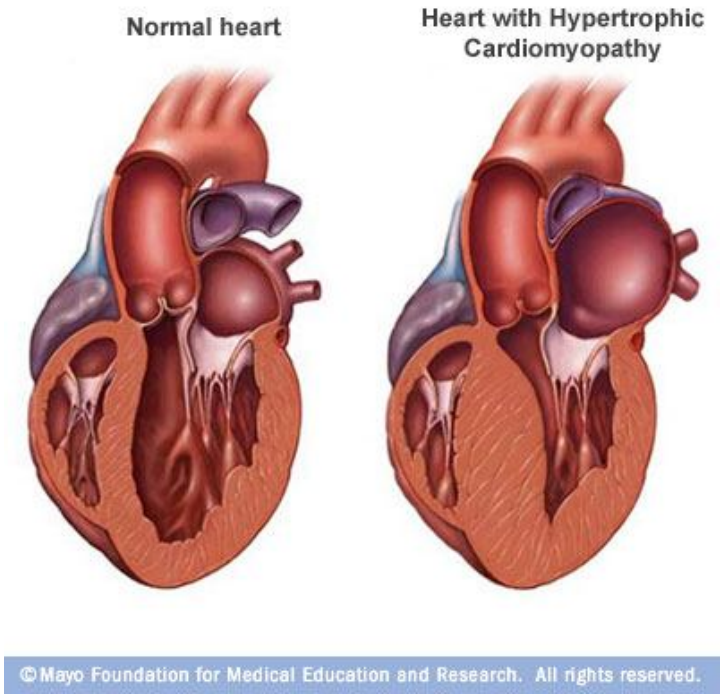
Dilated cardiomyopathy is the most common form of this disease. The main characteristic is an enlarged ventricular chamber. Thickness of the ventricular wall is not affected. The following image is a heart from a patient who died from complications of dilated cardiomyopathy; the ventricular walls appear thin due to the dilation of the ventricular chambers:



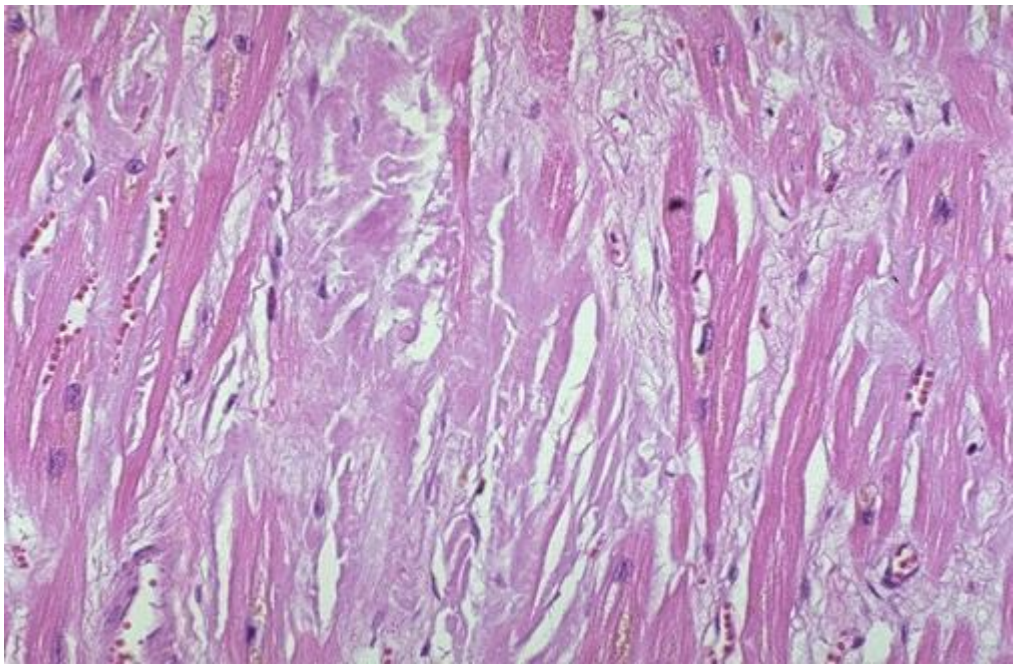
Dilation of the ventricles results in weak, slow pumping of blood, leading to clots, arrhythmias, and problems with electrical conduction. If cardiomegaly occurs murmurs can result. Due to an

increase in sympathetic nervous activity blood pressure may increase, vasodilators can be given to lessen the ventricle's workload.

In hypertrophic cardiomyopathy myocardium of the left ventricle hypertrophies. This form on cardiomyopathy is the mostly commonly inherited heart defect in the United States. There are two forms of this disease, hypertrophic obstructive cardiomyopathy and hypertrophic non-obstructive cardiomyopathy. In hypertrophic obstructive cardiomyopathy the intraventricular septum hypertrophies and obstructs blood flow from the left ventricle. This can lead to distortion of the mitral valve resulting in a murmur. Hypertrophic non-obstructive cardiomyopathy results in hypertrophic myocardium of the left ventricle which does not obstruct blood flow. Symptoms of hypertrophic cardiomyopathy include shortness of breath, dizziness, fainting, and angina pectoris.

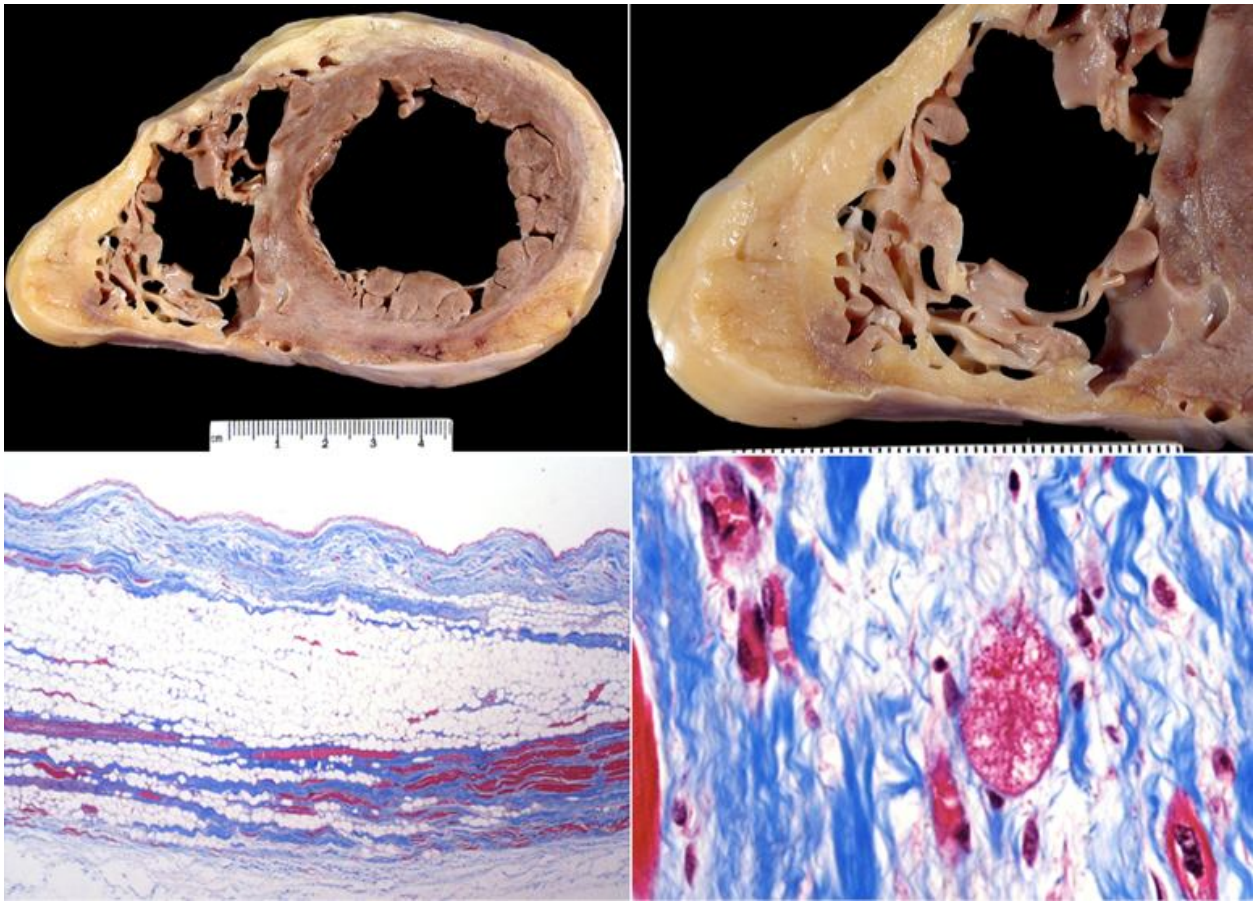


In restrictive cardiomyopathy myocardium of the ventricles becomes rigid and affects the heart's ability to relax between contractions, resulting in inability of the ventricles to fill adequately. Restrictive cardiomyopathy is usually only a symptom of another disease. Some of these diseases include amyloidosis in which protein collects in the walls of the heart. Hemochromatosis in which the body deposits excess iron into the heart walls. Sarcoidosis in which granulomas are deposited into the walls of the heart. These granulomas contain white blood cells which increase inflammatory response to the myocardium resulting in a loss of flexibility. The following image is an example of restrictive cardiomyopathy caused by amyloidosis.



Arrhythmogenic right ventricular cardiomyopathy is very rare and is believed to be an inherited genetic defect in which damaged myocardial cells are replaced with adipose tissue. This condition leads to arrhythmias and abnormal contractions. Arrhythmogentic right ventricular cardiomyopathy is the most common form of sudden, unexpected death in athletes.

Research seems to indicate that this condition arises due to the body's inability to properly remove damaged cells. The following is an example of young man's heart who died due to arrhythmogenic right ventricular cardiomyopathy while playing baseball. The top images show adipose tissue within the walls of the right ventricle. The bottom left image is a Masson trichrome stain demonstrating the thickness of the right ventricle. Only a small amount of muscle tissue is shown within an area of scarring. The bottom right image shows myocyte vacuolization.



Works Cited

"Arrhythmogenic Right Ventricular Cardiomyopathy: EMedicine Pathology." *EMedicine - Medical Reference*. Web. 30 Mar. 2010. <http://emedicine.medscape.com/article/1612324-overview>.

"Cardiomyopathy - Definition of Cardiomyopathy in the Medical Dictionary - by the Free Online , Thesaurus and Encyclopedia." *Medical Dictionary*. Web. 30 Mar. 2010. <http://medical-dictionary.thefreedictionary.com/cardiomyopathy>.

"Cardiomyopathy." *American Heart Association*. Web. 30 Mar. 2010. <http://www.americanheart.org/presenter.jhtml?identifier=4468>.

"Cardiovascular Pathology." *EHSL - Spencer S. Eccles Health Sciences Library Home Page*. Web. 30 Mar. 2010. <http://library.med.utah.edu/WebPath/CVHTML/CV072.html>.

"Dilated Cardiomyopathy: EMedicine Pathology." *EMedicine - Medical Reference*. Web. 30 Mar. 2010. <http://emedicine.medscape.com/article/1612303-overview>.

"MayoClinic.com Health Library - Hypertrophic Cardiomyopathy." *Home*. Web. 30 Mar. 2010. <http://www.riversideonline.com/health_reference/Disease-Conditions/DS00948.cfm>.