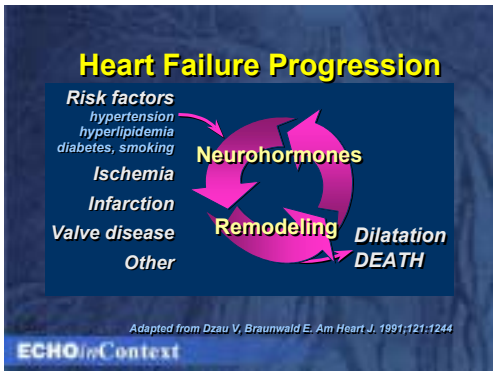
1

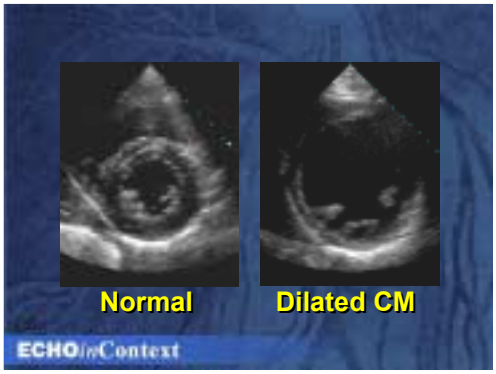


There are many ways to enter the progression of heart failure (left). Most worrisome is the growth in hypertension and ischemia. Then there is the vicious cycle of neurohormonal changes and remodeling that leads to LV dilatation and death. Once symptomatic, we worry that the process is very advanced.

2

The most severe remodeling occurs in dilated cardiomyopathy where the LV dilates and walls hypertrophy.

3

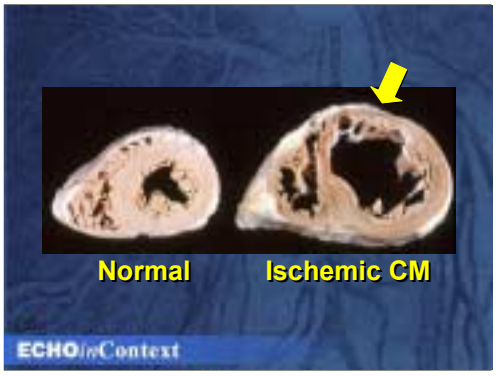


Echo sees these changes.

4

A very serious problem is the increase in ischemia and infarction. Many times the ischemia is silent and the last, and only, manifestation of coronary disease is symptomatic heart failure.

5

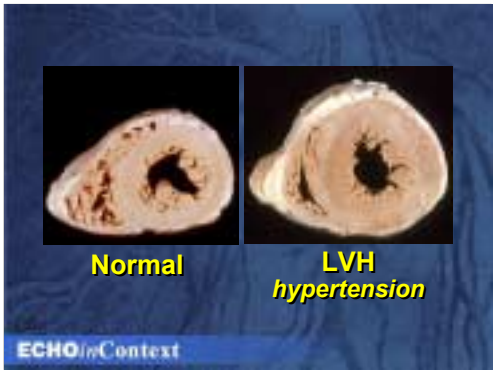


In very advanced states of systolic failure due to ischemia and infarction, there is scarring and wall thinning (arrow). This is very severe remodeling.

6

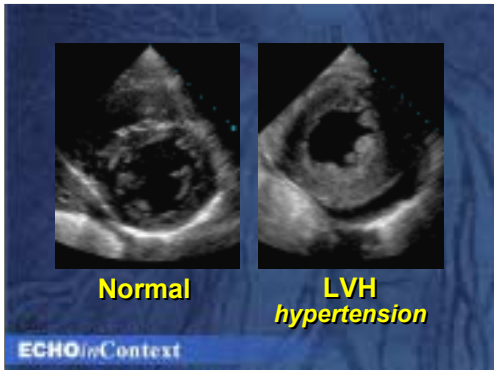
The apex of patients with LV failure is invariably very trabeculated, a relative wall thickening in comparison to normal. This complicates the detection of small thrombi, making differentiation of trabeculation from thrombus impossible. Normal is at the upper left. The remainder are from patients with systolic failure. Some experts think that these apical changes represent remodeling.

7



Diastolic failure always accompanies LVH. On the right is a patient with hypertension. Diastolic filling problems are present.

8

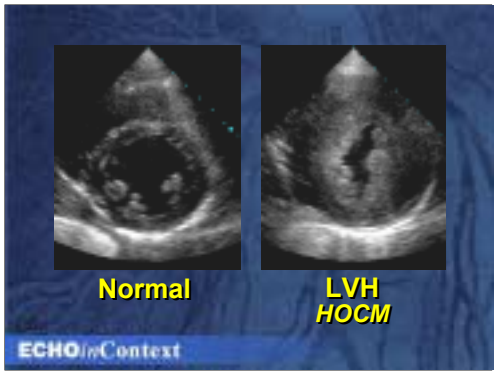


The echo on the right indicates LVH and some form of filling abnormality and diastolic failure is certain.

9

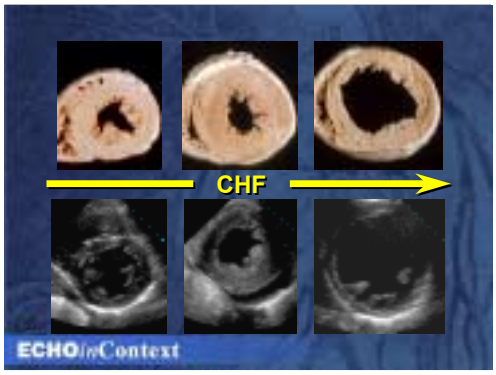
HOCM is one of the worst forms of diastolic filling abnormalities because of the severe LVH.

10



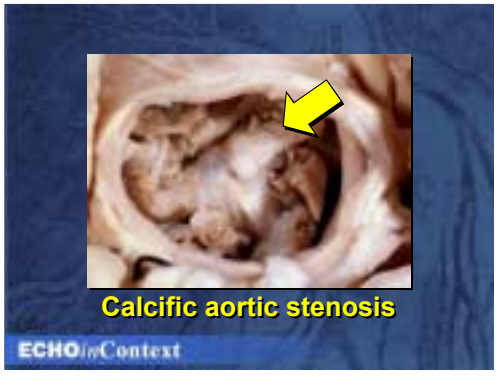
Again, echo sees these changes and the LVH represents a form of remodeling. In these cases there is no systolic failure.

11



The progression of heart failure as the normal moves to LVH (diastolic failure) and then dilatation (systolic AND diastolic failure). Relate these picture to the first slide.

12



When valuvular disease is present, like aortic stenosis it may lead to heart failure.

13

With severe aortic stenosis, there will be progressive LVH and diastolic failure and ultimately dilation and systolic failure. Invariably, every case of systolic failure also has diastolic failure.