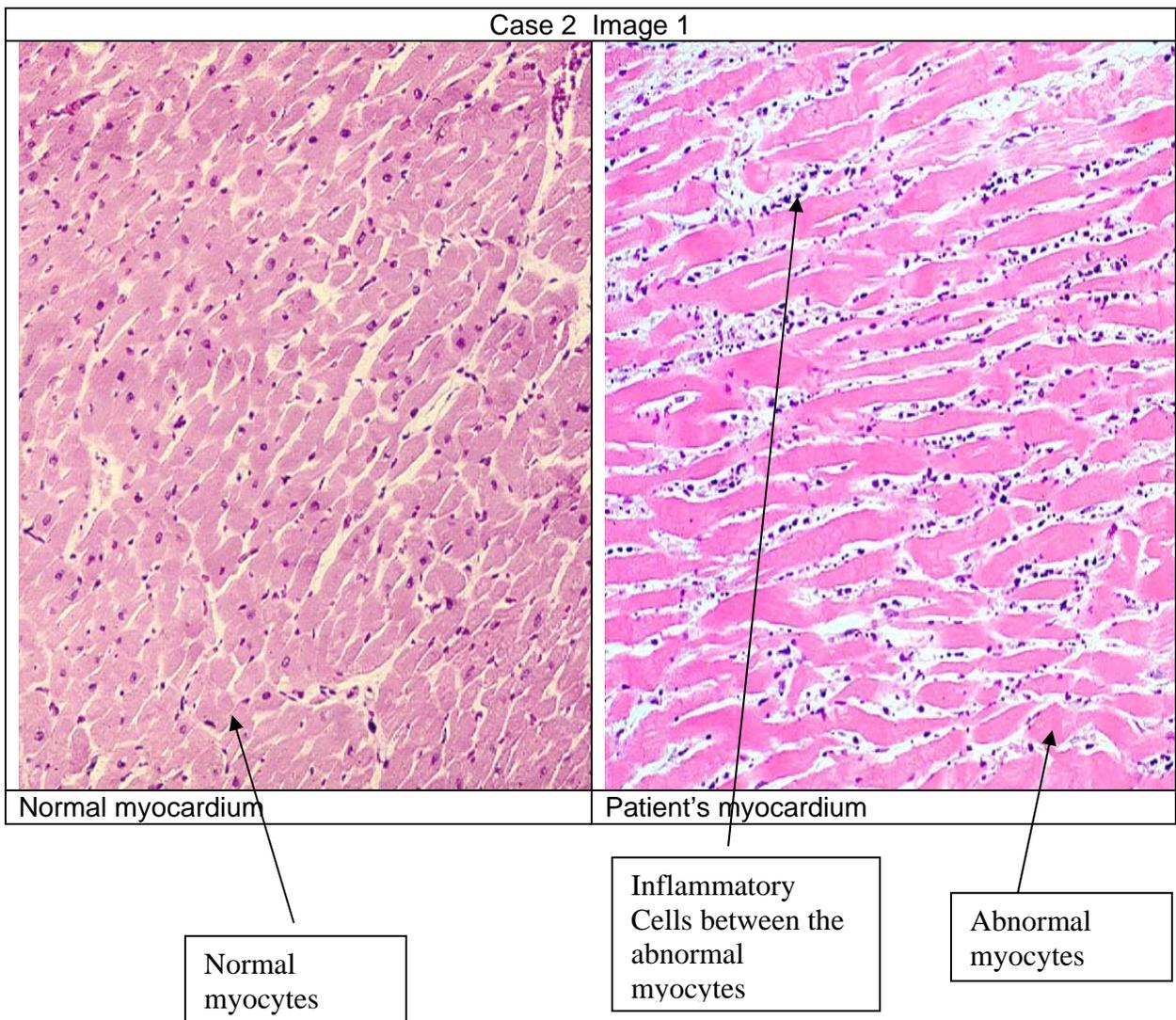


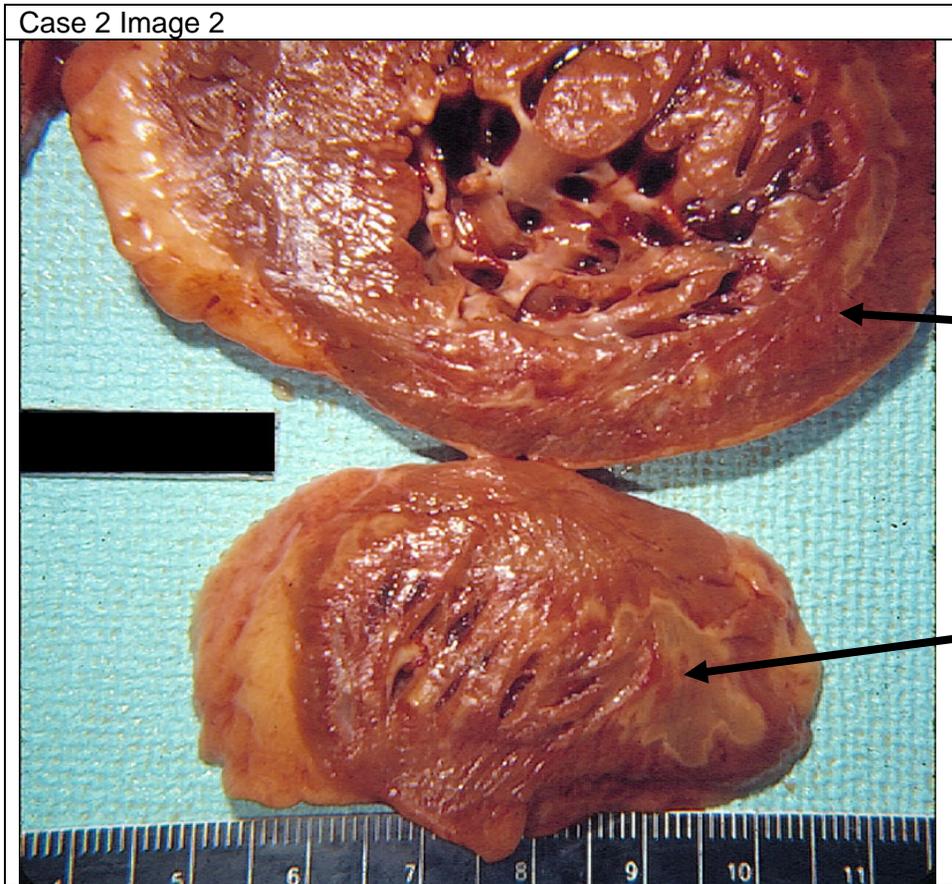
**Small Group Session II - Case 2**

A 50 year old man with no significant medical history complained of sudden onset of crushing anterior chest discomfort and nausea while playing tennis. He was brought to the Emergency Room. On physical exam, the patient was pale, diaphoretic and anxious. His pulse was rapid, weak and irregular, and blood pressure was 100/60. Chest auscultation revealed rales in the lung bases. ECG demonstrated ST segment elevation in the V4-V6 leads. Serum troponin and CK-MB levels were elevated and rose on repeat measurements over the following hours (ST segment elevation on EKG and rising troponin and CK-MB levels are indications of a myocardial infarction).

**Instructions**

You have been provided with images of the gross and histologic changes that might be expected in the heart of this patient at about 3 days following the onset of his symptoms. Please answer the following questions, working as a team and referring to Robbins or other sources. Be prepared to present your findings to the class.





Cross-section of the heart. Demonstrating the apex and section through the left ventricle. This is left ventricular wall

Area of discoloration at the apex of the heart

**Task 1.** The clinical history, physical findings, ECG and lab studies should suggest a diagnosis.

What do you think is the most likely diagnosis using a layperson's terminology?

What is the pathologic term used to describe this process?

**Task 2.** Rales are crackling noises heard on auscultation of the lungs, frequently as a result of the presence of fluid in the airspaces.

What do you think accounts for the finding of rales in this case? (Hint: oxygenated blood normally flows from the lungs through the pulmonary veins to the left atrium and ventricle, and then is pumped out into the aorta. Think about what would happen to the blood in the pulmonary circulation if the left ventricle has been damaged and is not pumping normally).

**Task 3.** What are troponin and CK-MB?

Why are the serum troponin and CK-MB levels elevated in this case?

**Task 4.** Image 1 shows the histologic appearance of normal myocardium on the left, and the expected changes in this case on the right. What changes do you see? (note the color of the abnormal myocytes; are nuclei present?)

**Task 5.** Image 2 shows the gross appearance of the expected changes in this case. What do you observe?

**Task 6.** What type of tissue necrosis is illustrated in this case? (coagulative, liquefactive, caseous, gangrenous, fat necrosis, or fibrinoid). Why?

**Task 7.** What happens to myocardial muscle that is necrotic? Where do the dead cells go?

**Task 8.** Briefly describe differences between necrosis and apoptosis.