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HOUSE CALLS

Ejection fraction measures heart pumping action

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Question: My brother is 60 and in terrible shape. He is overweight and never exercises, but at least he doesn't smoke. He was hospitalized recently with very high blood pressure. His doctor said he had an enlarged heart and his "ejection fraction" was low. Can you explain this term?

Answer: The work the heart does is staggering, but we really don't appreciate it because it functions below our awareness level. Only when it begins to fail do we take notice. Comprised of a specialized muscle type, the normal adult heart is about the size of your fist. It contains four chambers: the right and left atria, which receive blood from the body and lungs, respectively, and the right and left ventricles, which pump blood to the lungs and body, respectively.

An "enlarged" heart generally refers to enlargement of these chambers and/or a thickening of the heart muscle. A large heart does not necessarily indicate a problem. Elite athletes typically have larger-than-normal hearts because of the effects training and conditioning have on the heart muscle. These hearts typically function very efficiently; they pump blood effectively with a relatively slow pulse rate and respond rapidly to additional demands.

Most often, when we talk about heart function, we refer to the left ventricle. This is the largest and most muscular of the heart chambers because it must pump blood to the entire body, except the lungs. When the left ventricular chamber becomes enlarged, its ability to pump efficiently is compromised. Overstretched muscle fibers make them less able to contract effectively. Less blood is pumped per stroke. The end result is heart failure, often called congestive heart failure because blood backs up into the lungs, which become congested.

CHF produces many symptoms: fatigue, swelling of the legs, shortness of breath, chest pain, palpitations or irregular heartbeat and weakness. CHF has many causes including, but not limited to, genetic conditions, viral illnesses, heart muscle damage from atherosclerotic heart disease, nutritional deficiencies and high blood pressure. In the last case, the heart can fail because of the added work demand of trying to pump against a higher pressure in the arteries.

Enlargement also can mean thickening of the heart muscle, known as hypertrophy. Like other muscles, a heart that is worked more than usual will thicken to compensate. Up to a point, this can be good, as in the athlete's heart noted above. Beyond that point, problems can arise. Think of an athlete who is "muscle bound," someone whose muscles are so large that they cannot move effectively. Some genetic conditions can predispose individuals to hypertrophy. High blood pressure also can be a cause.

Ejection fraction measures effective heart pumping action. It refers to the percent of the blood in a heart chamber, usually the left ventricle, that is "ejected" when the ventricle contracts. A normal ejection fraction is between 55 percent and 70 percent. Numbers below 35 percent usually indicate a significant problem and are associated with a poorer prognosis. Ejection fraction can be measured different ways. It is not the sole predictor of severe heart problems, but it is a good benchmark. More important than a single number is what happens to it over time with treatment. Medications and changes in lifestyle can go a long way to reversing a low number.

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