Cardiovascular Essay

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The heart is a remarkable organ and without it, life could not be sustained. The heart pumps blood throughout the entire body like a machine without batteries, without electrical plugs and without assistance. The hearts ability to pump on its own is miraculous. With a healthy heart - and other healthy organs - we have the opportunity to live long lives.

On the other hand, there are many instances when the heart will not function properly that includes congenital disease, unhealthy lifestyles, stress, and infections. In the case provided, a 14 year old girl had undergone a physical examination prior to being admitted to summer camp. She was found to have a loud heart murmur at the second intercostal space to the left side of the sternum.

As defined, a heart murmur is an abnormal, extra sound during the heartbeat cycle made by blood moving through the heart and its valves. A heart which is beating normal makes two sounds, "lubb" when the valves between the atria and ventricles close, and "dupp" when the valves between the ventricles and the major arteries close. A heart murmur is a series of vibratory sounds made by turbulent blood flow. The sounds are longer than normal heart sounds and can be heard between the normal sounds of the heart. Heart murmurs are common in children and can also result from heart or valve defects. Nearly two thirds of heart murmurs in children are produced by a normal heart and are harmless. This type of heart murmur is usually called an "innocent" heart murmur. It can also be called "functional" or "physiologic." Innocent heart murmurs are usually very faint, intermittent, and occur in a small area of the chest. Pathologic heart murmurs may indicate the presence of a serious heart defect. They are louder, continual, and may be accompanied by a click or gallop (www.healthatoz.com).

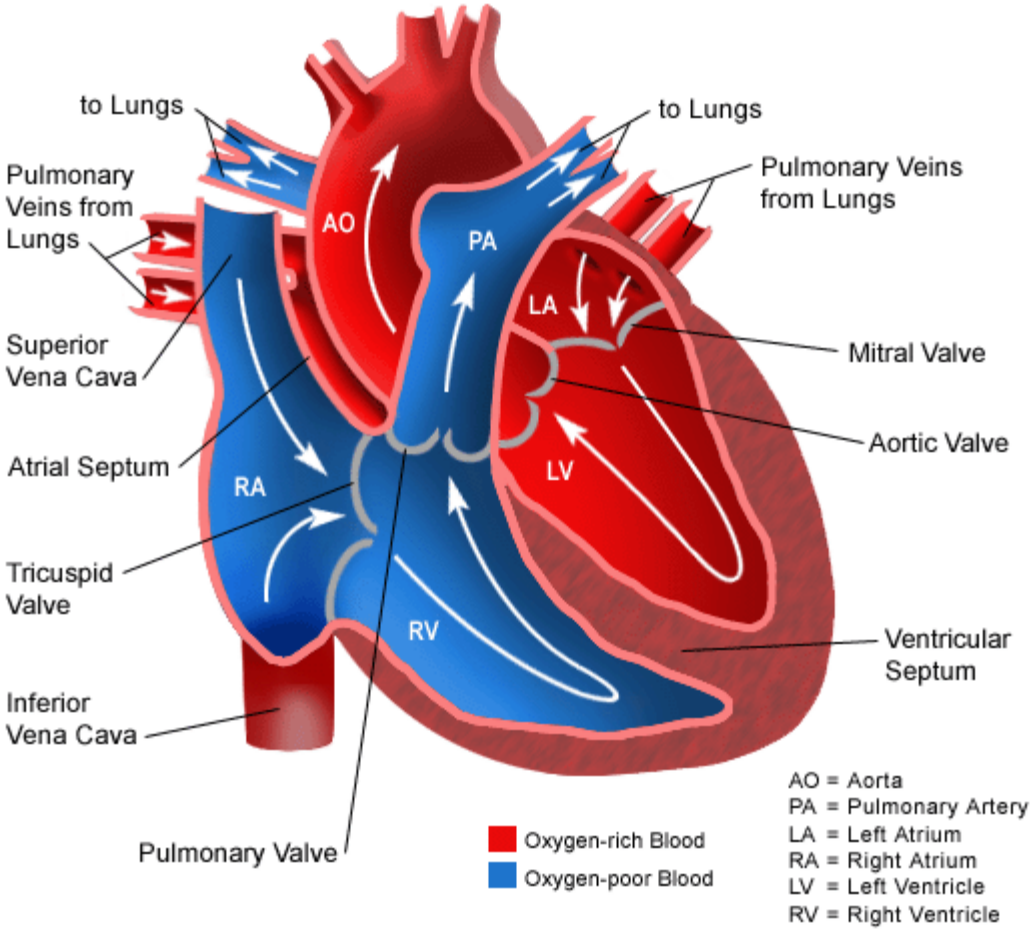
Pathologic heart murmurs, however, are caused by structural abnormalities of the heart. These include defective heart valves or holes in the walls of the heart. Valve problems are more common. Valves that do not open completely cause blood to flow through a smaller opening than normal, while those that do not close properly may cause blood to go back through the valve. A hole in the wall between the left and right sides of the heart, called a septal defect, can cause heart murmurs (www.healthatoz.com). Because of the location and loud sounds of our young patients' heart murmur, she has pulmonic stenosis. The point where a murmur is heard loudest can help pin down the type. For instance, a murmur caused by mitral insufficiency may be heard loudest at the apex, while pulmonic stenosis is heard loudest at the second intercostal space, left sternal border (drgreene.mediwire.com). Congenital pulmonary stenosis occurs due to improper development of the pulmonary valve in the first 8 weeks of fetal growth. It can be caused by a number of factors, though most of the time this heart defect occurs sporadically (by chance), with no clear reason evident for its development (www.healthsystem.virginia.edu).

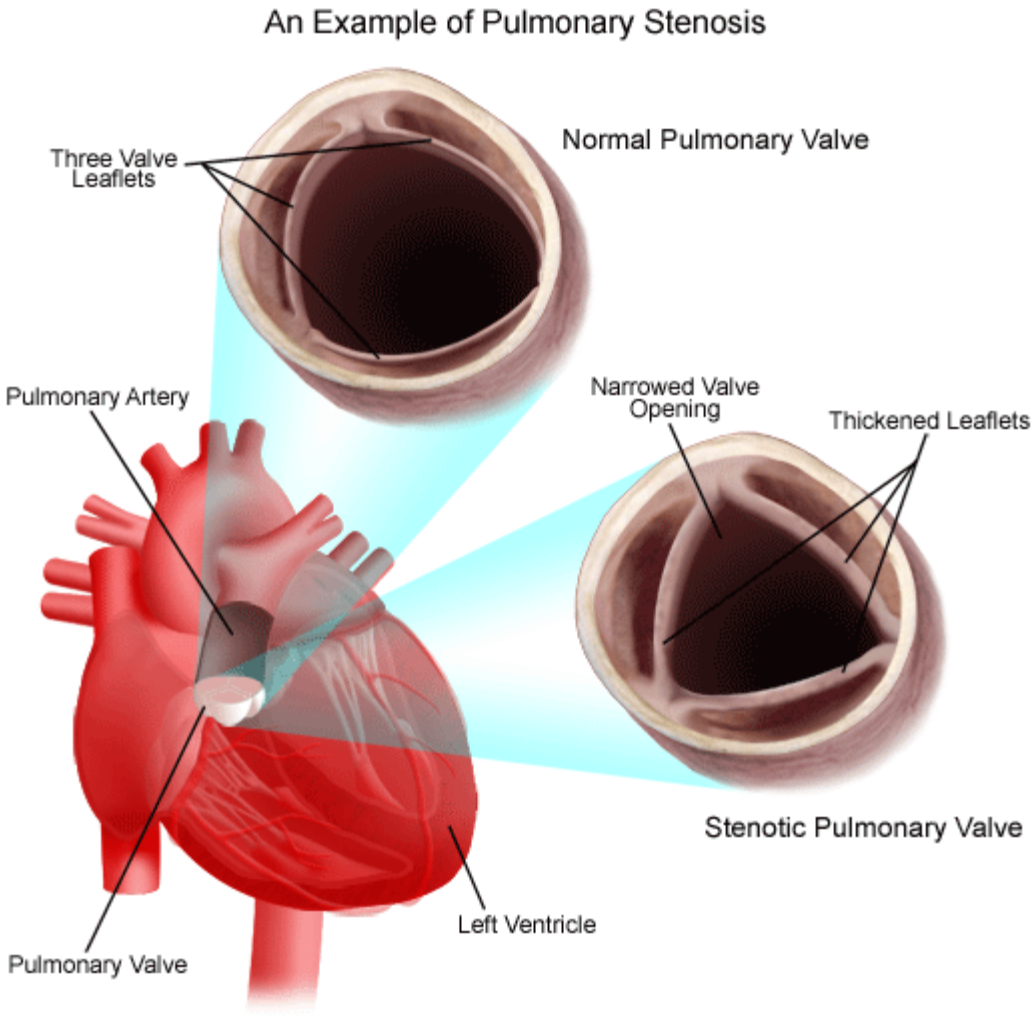
Some congenital heart defects may have a genetic link, either occurring due to a defect in a gene, a chromosome abnormality, or environmental exposure, causing heart problems to occur more often in certain families (www.healthsystem.virginia.edu).

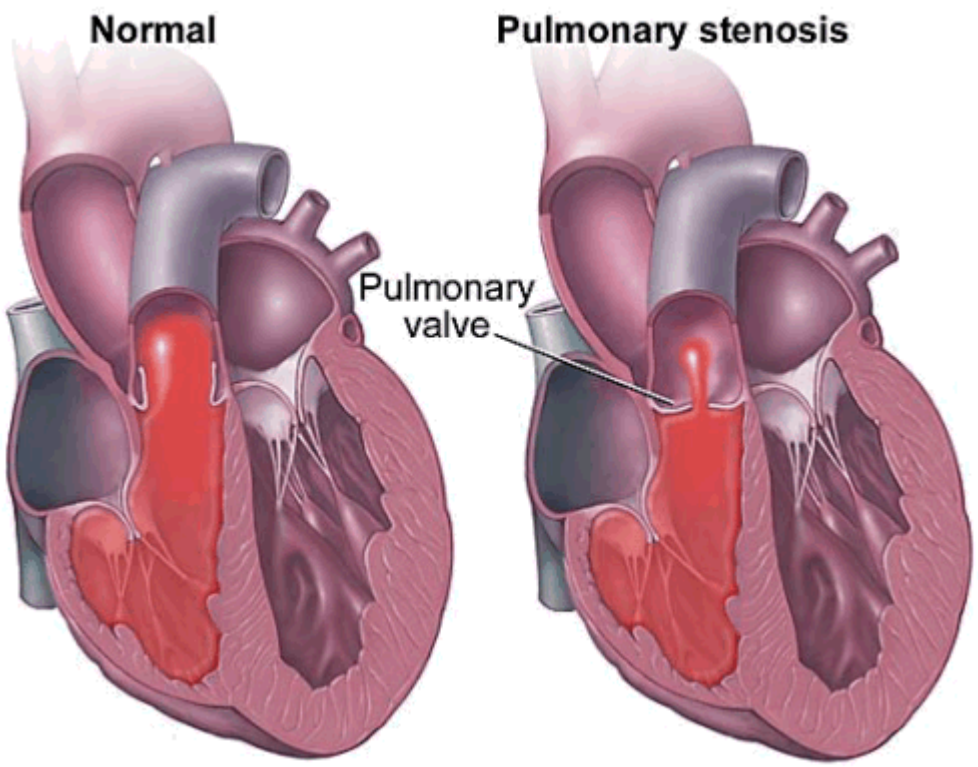
Based on a variety of studies, the 14 year old in our case can lead a normal life. Children with mild pulmonary valve stenosis rarely require treatment. Patients with mild pulmonary valve stenosis are healthy, can participate in all types of physical activities and sporting events, and lead normal lives (www.cincinnatichildrens.org).

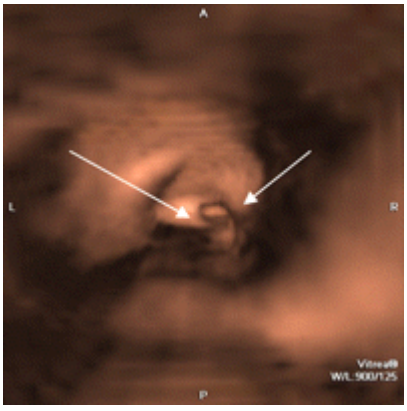
Our patient should have normal physicals and monitored for any types of symptoms that could indicate that she's experiencing some difficulty with the heart murmur. If she were an infant, there would be a heightened cause for concern and closer monitoring. Mild pulmonary valve stenosis in childhood rarely progresses after the first year of life. However, mild pulmonary stenosis in a *young infant* may progress to more severe degrees and requires careful follow-up (www.cincinnatichildrens.org). Should surgery be necessary, the prognosis for most children with this condition is favorable. The long-term outlook after pulmonary stenosis repair has shown that most children will live healthy lives with activity levels, appetite and growth returning to normal over time (www.childrenshospital.org).

Normal Heart




An Example of Pulmonary Stenosis
Three Valve Leaflets
Normal Pulmonary Valve
Pulmonary Artery
Narrowed Valve Opening
Thickened Leaflets
Stenotic Pulmonary Valve
Left Ventricle
Pulmonary Valve


Normal
Pulmonary stenosis
Pulmonary valve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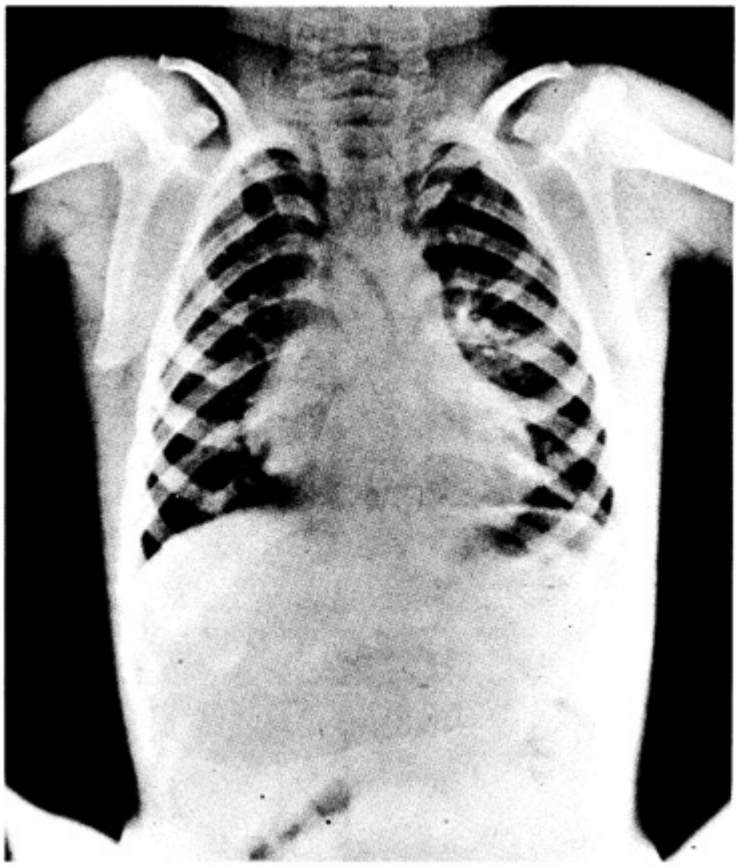


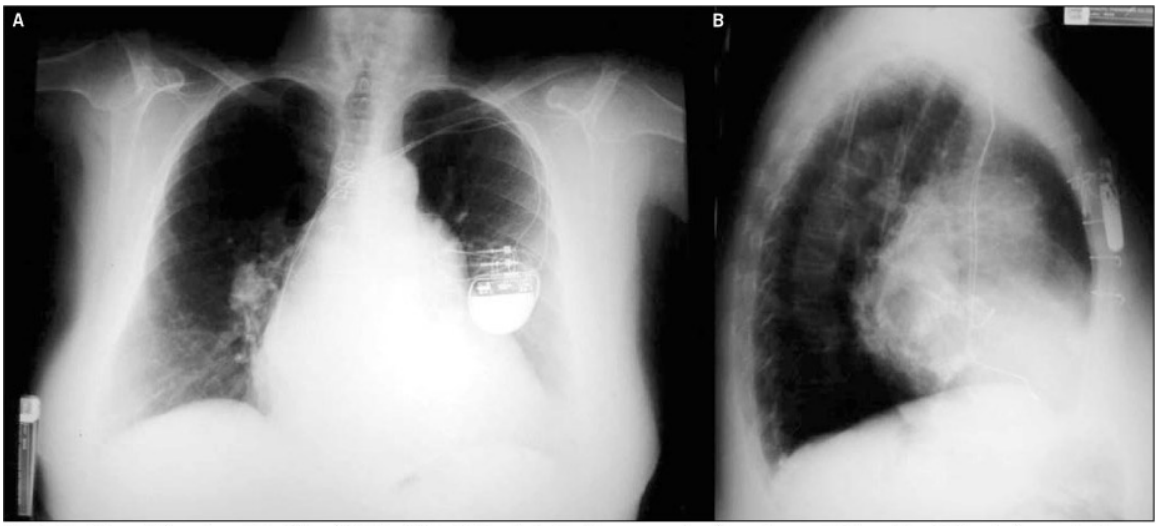
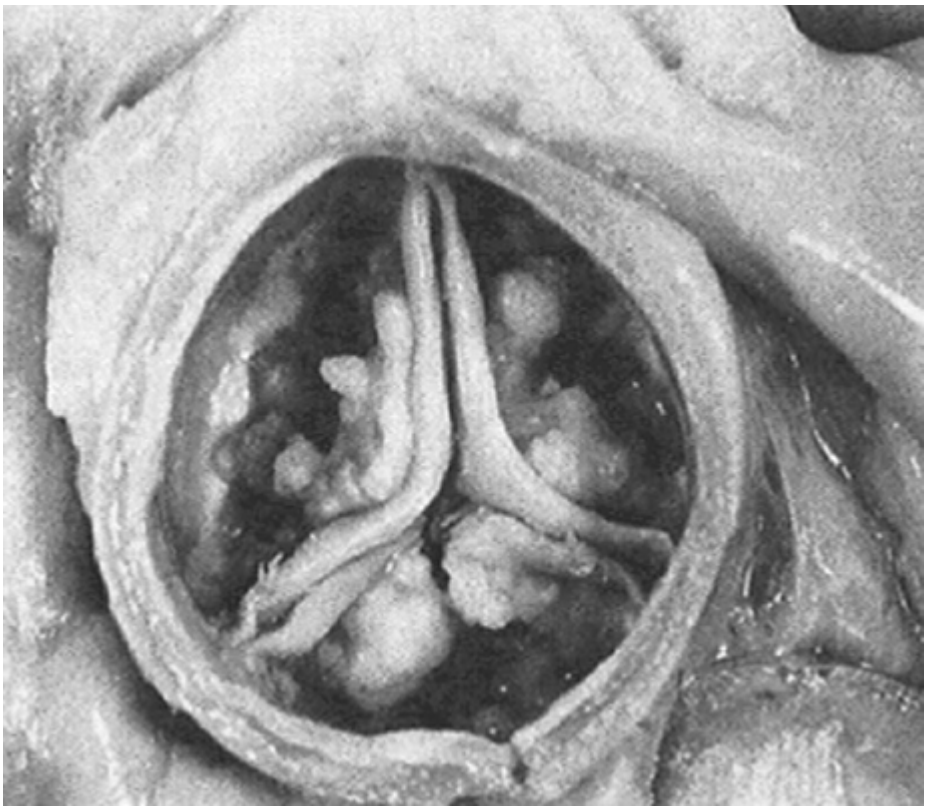


Fig. 2 - Chest X-rays in the posteroanterior (A) and left lateral (B) projections indicating the presence of cardiomegaly, upper bulging of the middle arch, increased pulmonary vascularization with the cephalization pattern, image of double cardiac contour in the right border, and increased carinal angle. The presence of a pacemaker is noted.

Aortic Stenosis



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