

**DEFINITION**

1. **Aortic stenosis** is the condition resulting from narrowing of the aortic orifice. **Aortic regurgitation** is the condition resulting from defective valve cusps or dilatation of the annulus (valve ring).

**CLINICAL MANIFESTATIONS****AORTIC STENOSIS**

2. Slight or moderate stenosis frequently does not cause any symptoms, the condition only being discovered as an incidental finding during routine examination or at autopsy.
3. When symptoms do occur they tend to be in middle or late life, fatigue and shortness of breath being those most commonly noted. As the disease progresses and when the valve obstruction is extreme, attacks of cardiac pain, dizziness and syncope occur. The syncopal attacks are characteristically provoked by effort or by change of position and they can be severe and frequent.
4. In the elderly patient, angina pectoris, syncope or acute pulmonary oedema may occur without preceding symptoms and often without previous knowledge of the disease.

**AORTIC REGURGITATION**

5. Aortic regurgitation may also be symptomless for many years. When symptoms do occur, they are usually an indication of some degree of left-sided heart failure. Breathlessness on exertion is commonly the earliest symptom and this, though slight at first, becomes progressively worse and is soon accompanied by attacks of cardiac asthma, more often when at rest and especially during sleep. Breathing discomfort when lying flat and attacks of angina pectoris frequently follow.

**AETIOLOGY**

6. Congenital valve abnormalities
  - 6.1. Experts on this subject hold the view that isolated aortic valvular disease without evidence of mitral valve involvement is nearly always congenital in type.
  - 6.2. A congenitally bicuspid valve is present in more than one half of patients with isolated aortic stenosis. Although the bicuspid valve is frequently not stenotic in early life, the abnormal stresses arising within the valve lead to immobility of the cusps and calcification.

## 7. Rheumatic fever

- 7.1. Rheumatic endocarditis occurring during the course of rheumatic fever is the commonest cause of aortic valvular disease and, in most cases, the mitral valve is also involved. However, manifestations of rheumatic fever such as arthritis, chorea and subcutaneous nodules can occur without cardiac damage.
- 7.2. It is generally accepted that rheumatic fever is a response, almost certainly allergic, to infection with the beta-haemolytic streptococcus A. The portal of entry is usually the throat and a sore throat, scarlet fever, otitis media or other streptococcal infection commonly precedes the onset of the rheumatic fever by two to three weeks.
- 7.3. Many streptococcal infections produce few or no symptoms and the absence of a history of rheumatic fever is of no value in excluding rheumatic fever as a cause of the valvular heart lesion. Rheumatic fever is most common between the ages of 7 and 8 years, being uncommon after puberty and extremely rare after the age of 20 years.
- 7.4. The essential heart valve lesion is the presence of rheumatic nodules in the endocardium of the valves. The condition is, however, a valvulitis and not merely an endocarditis. This leads to a thickening of the cusps. There may also be the formation of rheumatic vegetations.
- 7.5. During the acute stage, the inflamed edges of the cusps adhere together and, with the onset of fibrosis, these adhesions become very firm so that the cusps cannot open as they should and there is narrowing or **stenosis** of the valves. **Regurgitation** results when there is sclerosis and contraction of the cusps or dilatation of the ring. This process is slow and insidious so that a period of years usually elapses before the first clinical manifestation of rheumatic valvular disease appears. Thus, if during an attack of rheumatic fever signs of established valvular disease are already present, the lesion could not have originated in that attack which must therefore be regarded as a recurrent attack.
- 7.6. In these cases, the aortic valve disease is regarded as an integral part of the rheumatic disease.

## 8. Syphilis

- 8.1. Syphilitic aortic valvular disease is now relatively uncommon. It is a late manifestation of the disease, the latent period between infection and clinical manifestations being between 10 and 30 years.
- 8.2. Unlike the rheumatic lesions, syphilis hardly ever attacks the valve cusps directly, the lesion being an extension of the aortic inflammatory process to the cusp which then leads to dilatation of the aortic orifice and aortic regurgitation. Aortic stenosis is not a feature of syphilis.

## 9. **Viral infections**

- 9.1. Recent studies largely based on animal experiments have suggested that a minority of cases of aortic valvular disease may be due to virus infection.
- 9.2. While there is no direct proof of a viral origin in man, the theory is that a virus may sometimes lie dormant in valvular or myocardial tissues, later becoming activated (possibly by a streptococcal infection) with the production of aortic valvular disease.

## 10. **Trauma**

Traumatic aortic regurgitation is rare and almost exclusively confined to males. It may be induced by stab wounds of the chest or rupture of an aortic valve cusp.

## 11. **Degenerative**

In the elderly, acquired aortic stenosis may arise as a degenerative process without fusion of the cusps, the stenosis resulting from calcium deposition within the valve cusps.

## 12. **Other causes**

Aortic regurgitation is also encountered with other diseases such as ankylosing spondylitis, bacterial endocarditis, rheumatoid arthritis, systemic hypertension, atherosclerosis, Marfan's syndrome and Reiter's disease. In these cases, the aortic valve disease is an integral part of the condition with which it is associated.

13. Once established, the course of the disease may be adversely affected by further attacks of rheumatic fever, by pregnancy and by excessive physical activity.

## **CONCLUSION**

14. The majority of cases of aortic valvular diseases are due to rheumatic endocarditis and are usually accompanied by involvement of the mitral valve. Where the lesion is one solely involving the aortic valve, the probability is that it is congenital in origin. Other, less common, causes have been listed above. The condition, once established, may be adversely affected by factors noted at paragraph 13 above.

## **REFERENCES**

De Bono D P, Boon N A. Diseases of the cardiovascular system - Aortic Stenosis – Aortic Regurgitation. In: Eds. Edwards Christopher R W, Bouchier Ian A D. Davidson's Principles and Practice of Medicine. 16<sup>th</sup> Ed. 1991. Edinburgh. Churchill Livingstone. p296-300

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