

Difference Between Rheumatic Heart Disease and Infective Endocarditis

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Key Difference - Rheumatic Heart Disease vs Infective Endocarditis

Rheumatic heart disease, which is a complication of rheumatic fever, is characterized by deforming valvular fibrotic disease, usually the [mitral valve](#). On the other hand, infective endocarditis is a microbial [infection](#) of the heart valves or of the mural endocardium that leads to the formation of vegetations composing of thrombotic debris and organisms that are often associated with the destruction of underlying cardiac tissues. The **key difference** between the two diseases is, **unlike infective endocarditis, which is purely due to infectious causes, rheumatic heart disease has an autoimmune component in its pathogenesis.**

What is Rheumatic Heart Disease?

Rheumatic fever is an [inflammatory disease](#) caused by the infection of group A streptococci which commonly affects children and young adults. There is a multisystem involvement with clinically significant changes taking place in the CNS, joints, and heart.

Initially, there is a pharyngeal infection by group A streptococci and the presence of their [antigens](#) triggers an autoimmune reaction that gives rise to the set of clinical features which we identify as rheumatic fever. The bacterium directly infects none of the affected organs.

Rheumatic heart disease, which is a complication of rheumatic fever, is characterized by deforming valvular fibrotic disease, usually the mitral valve.

Cardinal morphological changes happening in the mitral valve in RHD are,

- Thickening of leaflets
- Commissural fusion and shortening
- Thickening and fusion of tendinous cords

Clinical Features

- Changes in the heart sounds can be heard during the auscultation
- S1 is accentuated in the early disease
- P2 is also accentuated
- There is a decrease in the splitting of S2
- A [diastolic](#) murmur is usually heard over the cardiac apex

Investigations

- Antistreptolysin o titer
- [ECG](#)
- Echocardiogram
- Chest X-ray

Management

Proper treatment of rheumatic fever is extremely important in the prevention of the disease progressing into RHD.

- The residual streptococcal infection has to be treated with oral phenoxymethyl penicillin. This antibiotic should be given even when the culture results do not confirm the presence of group A streptococci.
- Any streptococcal infection that develops in the future should be treated.



Figure 01: Streptococcal Infection of the throat

To prevent cardiac manifestations, prophylactic treatments can be given. Patients who have had RHD should be given a dose of prophylactic antibiotics prior to dental procedures in order to prevent secondary infective endocarditis. In some patients surgical correction of the mitral stenosis is necessary.

What is Infective Endocarditis?

Infective endocarditis is a microbial infection of the heart valves or the mural endocardium. It leads to the formation of vegetations composed of thrombotic debris and organisms that are often associated with the destruction of underlying cardiac tissues. Bacteria are the commonest causative agents of infective endocarditis though it is possible to be due to the infections by other categories of organisms also. There are main two varieties of infective endocarditis as acute and subacute endocarditis. This classification is made based on the speed with which the clinical features develop.

Risk Factors

- Intravenous drug abuse
- Poor dental hygiene
- Intravascular cannulae
- Soft tissue infections
- Cardiac surgery and permanent pacemakers

Clinical Features consistent with both forms of Infective Endocarditis

- New valve lesion/ regurgitant murmur
- Embolic events of unknown origin
- [Sepsis](#) of unknown origin
- Hematuria, [glomerulonephritis](#) and renal infarctions
- Fever
- Peripheral abscesses of unknown origin

Modified Duke's Criteria for the diagnosis of Infective Endocarditis

Major Criteria

- Blood culture/s positive for a characteristic organism or persistently positive for an unusual organism
- Echocardiographic evidence confirming the valvular lesions
- New valvular [regurgitation](#)

Minor Criteria

- Predisposing heart lesions or intravenous drug use
- Fever
- Microbiologic evidence including a single culture positive for an unusual organism
- Vascular lesions such as Janeway lesions and splinter haemorrhages

Investigations

- Blood cultures
- Echocardiogram

Management

Antibiotic treatment has to be commenced as soon as possible. Before the start of the empirical antibiotic therapy blood samples need to be taken and sent to cultures. Antibiotic therapy has to be continued for 4-6 weeks. The patient should respond to the antibiotics within the first 48 hours of their administration. The resolution of fever, decline in the level of serum markers of infection and relief of systemic symptoms will show the effectiveness of the therapy. Surgical intervention is necessary when the patient does not respond to the antibiotic therapy.

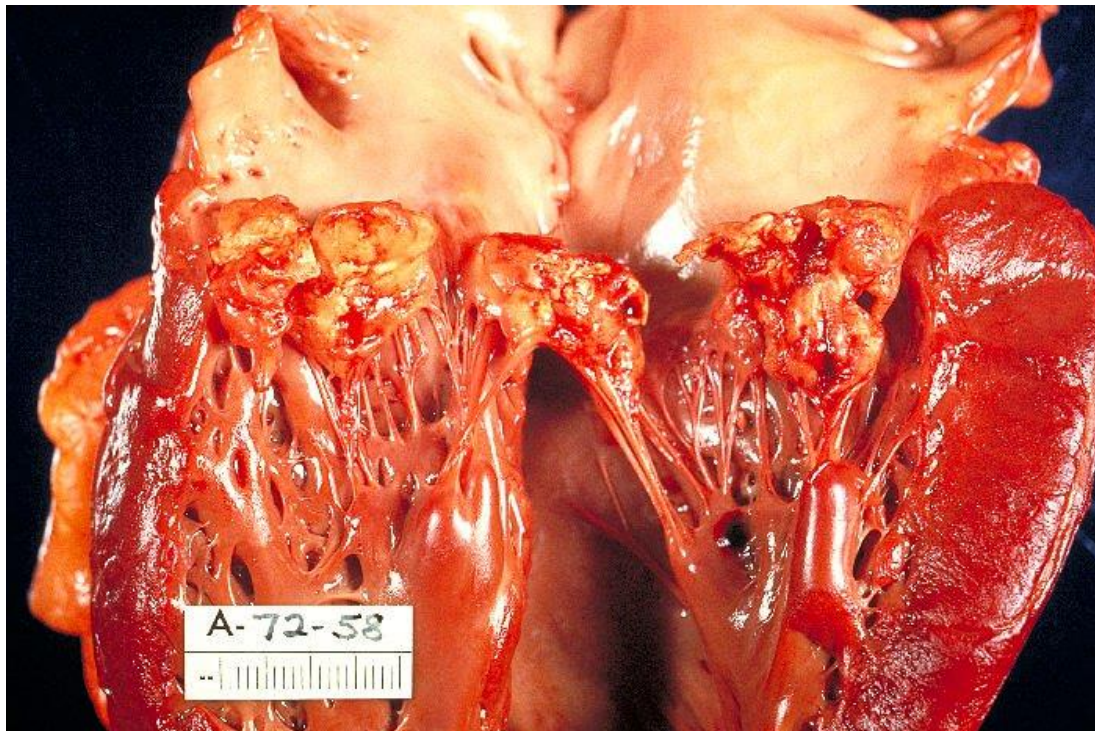


Figure 02: Infective Endocarditis

Subacute endocarditis is due to the infection of the previously damaged cardiac valves by low virulent bacteria such as *Viridans streptococci*. There is only a minimal destruction of the cardiac valves. The appearance of symptoms mentioned above can usually happen few weeks after the initial infection. [Subacute endocarditis](#) can be treated only with antibiotics.

What is the Similarity Between Rheumatic Heart Disease and Infective Endocarditis?

- Both diseases are cardiac conditions with an infectious background.

What is the Difference Between Rheumatic Heart Disease and Infective Endocarditis?

Rheumatic Heart Disease vs Infective Endocarditis	
Rheumatic heart disease which is a complication of rheumatic fever is characterized by deforming valvular fibrotic disease, usually the mitral valve.	The Infective endocarditis is a microbial infection of the heart valves or the mural endocardium that leads to the formation of vegetations that are composed of thrombotic debris and organisms often associated with the destruction of underlying cardiac tissues.
Disease Type	
RHD is an autoimmune condition	Infective endocarditis does not have an autoimmune background.
Risk Factors	
Previous streptococcal infections is the main risk factor for RHD	<p>Risk factors are,</p> <ul style="list-style-type: none"> · Intravenous drug abuse · Poor dental hygiene · Intravascular cannulae · Soft tissue infections · Cardiac surgery and permanent pacemakers
Clinical Features	
<p>Changes in the heart sounds can be heard during the auscultation</p> <p>S1 is accentuated in the early disease</p> <p>P2 is also accentuated</p> <p>There is a decrease in the splitting of S2</p> <p>A diastolic murmur is usually heard over the cardiac apex</p>	<p>Following Clinical features consistent with both forms of infective endocarditis</p> <ul style="list-style-type: none"> · New valve lesion/ regurgitant murmur · Embolic events of unknown origin · Sepsis of unknown origin · Hematuria, glomerulonephritis and

	<p>renal infarctions</p> <ul style="list-style-type: none"> · Fever · Peripheral abscesses of unknown origin
Investigation	
<p>Investigations performed include</p> <ul style="list-style-type: none"> · Antistreptolysin o titer · ECG · Echocardiogram · Chest X-ray 	<p>Infective endocarditis is diagnosed with the help of following investigations</p> <ul style="list-style-type: none"> · Blood cultures · Echocardiogram
Treatment	
<p>Proper treatment of rheumatic fever is extremely important in the prevention of the disease progressing into RHD.</p> <ul style="list-style-type: none"> · The residual streptococcal infection has to be treated with oral phenoxymethylpenicillin. This antibiotic should be given even when the culture results do not confirm the presence of group A streptococci. · Any streptococcal infection that develops in the future should be treated immediately. <p>To prevent cardiac manifestations, prophylactic treatments can be given. Patients who have had RHD should be given a dose of prophylactic antibiotics before dental procedures to prevent secondary infective endocarditis. In some patients surgical correction of the mitral stenosis is necessary.</p>	<p>Antibiotic treatment should be started as soon as possible and should be continued for 4-6 weeks. The patient should respond to the antibiotics within the first 48 hours of their administration. The effectiveness of the therapy is seen by the resolution of fever, decline in the level of serum markers of infection and the relief of systemic symptoms. Surgical intervention is necessary when the patient does not respond to the antibiotic therapy.</p>

Summary - Rheumatic Heart Disease vs Infective Endocarditis

Rheumatic heart disease, which is a complication of rheumatic fever, is characterized by deforming valvular fibrotic disease, usually the mitral valve whereas infective endocarditis is a microbial infection of the heart valves or the mural endocardium and it leads to the formation of vegetations composed of thrombotic debris and organisms often associated with the destruction of underlying cardiac tissues. Autoimmune mechanisms contribute to the occurrence of RHD but not for the occurrence of infective endocarditis. This is the principle difference between the two disorders.

Reference:

1.Kumar, Parveen J., and Michael L. Clark. Kumar & Clark clinical medicine. Edinburgh: W.B. Saunders, 2009.

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