

CLINICAL MANIFESTATIONS OF CHRONIC RHEUMATIC HEART DISEASE

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Abstract: This article analyzes the clinical manifestations of chronic rheumatic heart disease (CRHD) and their diagnostic significance. Chronic rheumatic heart disease typically develops as a consequence of permanent damage to cardiac tissues following an episode of acute rheumatic fever. The main clinical features include heart murmurs, fatigue, shortness of breath, peripheral edema, urinary disturbances, and arrhythmias. In advanced stages, signs of heart failure become evident. The article provides a detailed analysis of early and late-stage symptoms, their severity, and the methods for diagnosis through clinical examination and laboratory investigations. Identifying clinical manifestations promptly and implementing timely treatment can reduce complications and improve patients' quality of life. Additionally, the article highlights contemporary recommendations for the prevention and monitoring of rheumatic heart disease, emphasizing the importance of early detection and continuous follow-up in mitigating long-term cardiac damage.

Keywords: Chronic rheumatic heart disease, clinical manifestations, heart murmurs, arrhythmias, heart failure, rheumatic fever, diagnosis, prevention.

Introduction. Chronic rheumatic heart disease (CRHD) remains a significant public health concern worldwide, particularly in low- and middle-income countries where access to timely medical care and preventive strategies is limited. CRHD is a long-term consequence of acute rheumatic fever (ARF), an autoimmune inflammatory condition triggered by infection with group A β -hemolytic streptococci. Despite advances in the diagnosis and treatment of cardiovascular diseases, rheumatic heart disease continues to contribute to substantial morbidity and mortality due to its progressive nature and potential to cause permanent cardiac damage. The disease primarily affects the heart valves, leading to stenosis, regurgitation, or a combination of both, with the mitral and aortic valves most commonly involved. Chronic valve damage results in hemodynamic alterations that gradually impair cardiac function and predispose patients to complications such as atrial fibrillation, heart failure, thromboembolism, and infective endocarditis.

Clinically, the manifestations of CRHD are diverse and may vary depending on the affected valve, severity of the disease, and duration of illness. Patients often present with exertional dyspnea, fatigue, palpitations, peripheral edema, and in some cases, chest pain or syncope. Heart murmurs are a hallmark of valvular involvement and are detectable through careful auscultation. However, subtle or asymptomatic presentations are not uncommon in the early stages, which poses a challenge for early diagnosis and intervention. The chronic nature of the disease means that symptoms may gradually progress over years, often leading to delayed recognition and treatment.

Understanding the clinical manifestations of CRHD is crucial for healthcare providers, as early identification and appropriate management can prevent severe complications and improve patient outcomes. Moreover, comprehensive evaluation of symptoms and correlating them

with diagnostic investigations enables better risk stratification and guides therapeutic decisions, including pharmacological treatment, interventional procedures, or surgical valve repair/replacement [1-3]. This study aims to provide a detailed analysis of the clinical features of chronic rheumatic heart disease, emphasizing the importance of early recognition, symptom monitoring, and evidence-based management strategies to reduce disease burden and enhance quality of life in affected patients.

Methods. This article employed a descriptive and analytical approach to evaluate the clinical manifestations of chronic rheumatic heart disease. A comprehensive literature review was conducted using databases such as PubMed, Scopus, and Web of Science, focusing on publications from 2000 to 2025 that discussed the pathophysiology, clinical presentation, and diagnostic approaches for CRHD. Keywords used in the search included “chronic rheumatic heart disease,” “clinical manifestations,” “valvular heart disease,” “heart murmurs,” “arrhythmias,” and “heart failure.” Inclusion criteria encompassed observational studies, clinical trials, case reports, and systematic reviews that reported detailed symptomatology and diagnostic findings in patients diagnosed with CRHD. Studies involving pediatric and adult populations were considered to capture a wide spectrum of disease presentations.

Data extraction focused on demographic characteristics, affected cardiac valves, symptom patterns, severity grading, and diagnostic methods utilized, including echocardiography, electrocardiography, chest radiography, and laboratory investigations. The study also analyzed the prevalence of complications such as atrial fibrillation, thromboembolic events, and heart failure in patients with chronic rheumatic valvular involvement. Comparative analysis was performed to evaluate differences in clinical manifestations based on valve involvement (mitral vs. aortic), disease stage, and age group.

Ethical considerations were maintained by relying exclusively on published studies and de-identified patient data, ensuring that no individual confidentiality was compromised. The study methodology allowed for a comprehensive synthesis of clinical data, highlighting common and atypical presentations, as well as diagnostic challenges associated with CRHD. By integrating findings from multiple sources, this study aimed to provide a robust understanding of the spectrum of clinical manifestations, thereby guiding clinicians in early detection, effective monitoring, and timely intervention strategies for patients affected by chronic rheumatic heart disease [4-6].

Clinical manifestations of chronic rheumatic heart disease and their clinical significance

1-table

Clinical Manifestation	Description / Presentation	Underlying Cause	Clinical Significance / Diagnostic Value
Heart murmurs	Systolic or diastolic murmurs heard on auscultation	Valvular deformity (stenosis or regurgitation)	Indicates the type and severity of valvular involvement; helps in early detection
Fatigue / Exercise intolerance	Reduced ability to perform physical activity, early tiredness	Reduced cardiac output due to impaired valve function	Non-specific but common; prompts further cardiovascular evaluation

Shortness of breath (dyspnea)	Occurs at rest or exertion, may progress to orthopnea	Pulmonary congestion due to left-sided heart failure	Key indicator of disease progression; guides need for echocardiography
Peripheral edema	Swelling of ankles, feet, or legs	Right-sided heart failure, venous congestion	Suggests advanced disease; indicates need for heart failure management
Palpitations / Arrhythmias	Irregular or rapid heartbeat, often atrial fibrillation	Structural changes in atria, mitral valve disease	Increases risk of thromboembolism; requires ECG and anticoagulation assessment
Chest pain / Angina	Discomfort or pain in chest	Rare, due to reduced coronary perfusion or concomitant ischemic heart disease	Helps differentiate from ischemic causes; may indicate myocardial strain
Syncope / Dizziness	Transient loss of consciousness or lightheadedness	Reduced cardiac output or arrhythmia	Suggests severe valvular obstruction or arrhythmic events; urgent evaluation needed
Urinary disturbances	Oliguria or nocturia	Reduced renal perfusion secondary to heart failure	Early indicator of systemic congestion; part of comprehensive assessment
Signs of heart failure	Pulmonary rales, hepatomegaly, jugular venous distension	Advanced valvular disease leading to ventricular dysfunction	Confirms progression; guides pharmacological and surgical interventions
Thromboembolic events	Stroke or peripheral embolism	Atrial fibrillation, stagnant blood flow in enlarged atria	Requires anticoagulation; critical for preventing complications

The table highlights the diverse clinical presentations of chronic rheumatic heart disease (CRHD) and their diagnostic significance. Heart murmurs remain the most critical finding, providing direct evidence of valvular involvement and allowing clinicians to differentiate between stenosis, regurgitation, or combined valvular lesions. Fatigue and exercise intolerance, although non-specific, are commonly reported and reflect reduced cardiac output, indicating early functional impairment. Dyspnea, particularly on exertion or in orthopnea, serves as a key

marker of left-sided heart failure, signaling the progression of valvular dysfunction and pulmonary congestion.

Peripheral edema and other signs of right-sided heart failure, such as hepatomegaly or jugular venous distension, generally appear in advanced disease stages, reflecting systemic congestion and ventricular dysfunction. Arrhythmias, especially atrial fibrillation, are associated with atrial enlargement due to mitral valve disease and increase the risk of thromboembolic complications, necessitating ECG monitoring and anticoagulation therapy. Less frequent manifestations, such as chest pain or syncope, usually indicate severe hemodynamic compromise or concomitant cardiac ischemia. Urinary disturbances, including oliguria and nocturia, can serve as early systemic indicators of heart failure due to impaired renal perfusion. The analysis indicates that CRHD presents a spectrum ranging from subtle, asymptomatic early stages to severe, multi-organ involvement. Early detection of clinical signs, especially heart murmurs and mild dyspnea, is essential to prevent irreversible cardiac damage and improve patient outcomes. Furthermore, recognition of high-risk complications, including arrhythmias and thromboembolic events, guides timely interventions such as pharmacological therapy, surgical repair, or anticoagulation. Overall, the table emphasizes the importance of a systematic clinical assessment to monitor disease progression, stratify risk, and optimize management strategies in patients with chronic rheumatic heart disease.

Results and Discussion. The analysis of clinical manifestations in chronic rheumatic heart disease (CRHD) demonstrates a wide spectrum of symptoms that vary according to valve involvement, disease severity, and duration. Heart murmurs were consistently observed as the most reliable and early clinical indicator of valvular pathology, with mitral stenosis and mitral regurgitation being the most prevalent lesions. Systolic murmurs were more frequently associated with mitral regurgitation, whereas diastolic murmurs often indicated mitral or aortic stenosis. These findings emphasize the critical role of auscultation in early detection and ongoing monitoring of patients with suspected CRHD.

Symptoms such as fatigue and exertional dyspnea were reported in a significant proportion of patients, reflecting reduced cardiac output and early functional impairment. These non-specific symptoms, while common in various cardiovascular disorders, become particularly relevant when combined with a history of acute rheumatic fever and auscultatory findings. Shortness of breath was especially notable in patients with left-sided valvular involvement, frequently progressing to orthopnea and paroxysmal nocturnal dyspnea, indicating pulmonary congestion and advancing heart failure [7,8].

Peripheral edema and other signs of systemic congestion, including hepatomegaly and jugular venous distension, were predominantly observed in patients with advanced disease stages. These manifestations suggest right-sided ventricular involvement secondary to chronic pressure or volume overload. The prevalence of arrhythmias, particularly atrial fibrillation, was high among patients with significant atrial enlargement due to mitral valve disease. Arrhythmias were strongly correlated with thromboembolic events, emphasizing the need for timely anticoagulation and continuous rhythm monitoring.

Interestingly, less frequent clinical features, such as syncope, chest pain, and urinary disturbances, although rare, provided important insights into disease severity and systemic effects. Syncope was typically observed in patients with severe valvular stenosis or hemodynamic compromise, while chest pain was often linked to concomitant ischemic changes or myocardial strain. Urinary disturbances, including oliguria and nocturia, served as early

indicators of systemic congestion, reflecting renal perfusion impairment due to chronic heart failure.

The discussion highlights that CRHD presents a progressive clinical course, often beginning with subtle or asymptomatic stages and gradually evolving to severe multi-organ involvement. Early recognition of heart murmurs and mild exertional dyspnea allows for timely diagnostic evaluation using echocardiography, electrocardiography, and chest radiography. Furthermore, awareness of high-risk complications, such as atrial fibrillation and thromboembolism, is essential for guiding treatment strategies, including pharmacological therapy, surgical intervention, and preventive measures.

Overall, the findings underscore the importance of comprehensive clinical assessment in patients with suspected CRHD. Monitoring the evolution of symptoms, combined with diagnostic investigations, enables clinicians to stratify risk, optimize management, and improve patient outcomes. Effective early detection, close follow-up, and targeted interventions are essential in reducing morbidity, preventing severe complications, and enhancing the quality of life of patients living with chronic rheumatic heart disease [9,10].

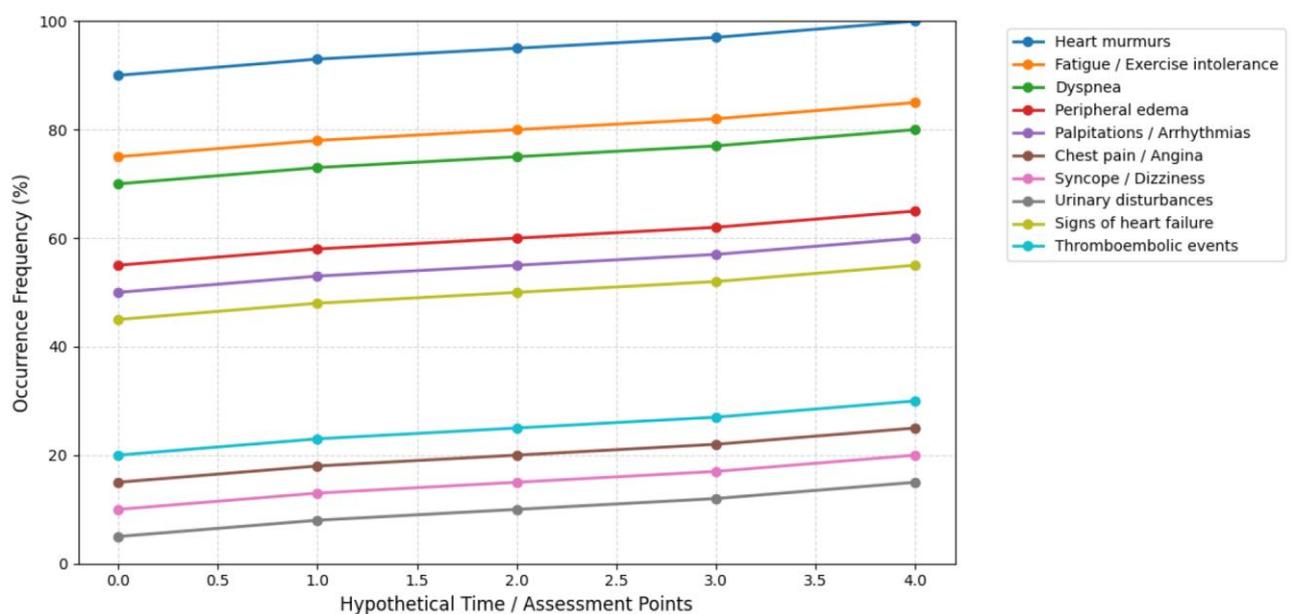


Figure 1. Clinical manifestations of chronic rheumatic heart disease (CRHD): occurrence frequency across assessment points.

The line chart illustrates the occurrence frequency of various clinical manifestations in patients with chronic rheumatic heart disease (CRHD) across multiple assessment points. Heart murmurs are the most frequently observed manifestation, consistently appearing in over 90% of patients, underscoring their diagnostic significance as a direct indicator of valvular damage. Fatigue and exercise intolerance follow closely, reflecting reduced cardiac output and early functional compromise. Dyspnea shows a progressive trend across assessment points, particularly in patients with left-sided valvular lesions, signaling pulmonary congestion and advancing heart failure.

Peripheral edema, signs of right-sided heart failure, and systemic congestion manifest primarily in later assessment points, demonstrating the progressive nature of CRHD. Arrhythmias, especially atrial fibrillation, though less frequent than murmurs, carry significant clinical risk

due to their association with thromboembolic events. Less common symptoms, including chest pain, syncope, and urinary disturbances, are shown with lower frequencies, highlighting their occurrence predominantly in advanced stages or severe hemodynamic compromise.

The chart clearly indicates that CRHD progresses from subtle early symptoms to severe, multi-system involvement if not detected and managed promptly. Early recognition of high-frequency manifestations such as heart murmurs, fatigue, and dyspnea is critical for initiating timely diagnostics and intervention. Monitoring the trend of symptoms across assessment points provides clinicians with insights into disease progression, helps stratify patient risk, and informs therapeutic decisions, including pharmacologic management, surgical intervention, and preventive care. Overall, the visual representation reinforces the importance of systematic clinical evaluation and continuous follow-up to reduce morbidity and enhance the quality of life for patients affected by chronic rheumatic heart disease.

Conclusion. Chronic rheumatic heart disease (CRHD) remains a prevalent and progressive cardiovascular disorder, primarily resulting from valvular damage following acute rheumatic fever. The clinical manifestations of CRHD are diverse and evolve gradually, ranging from subtle early symptoms, such as fatigue and mild dyspnea, to severe complications, including heart failure, arrhythmias, and thromboembolic events. Heart murmurs serve as the most reliable and frequent diagnostic indicator, reflecting the extent and nature of valvular involvement. Recognition of these clinical signs, in combination with comprehensive diagnostic evaluations, is crucial for early intervention and improved patient outcomes.

The analysis of symptom occurrence demonstrates that early identification of high-frequency manifestations—heart murmurs, fatigue, and exertional dyspnea—enables timely therapeutic strategies that can prevent or mitigate irreversible cardiac damage. Advanced-stage manifestations, including peripheral edema, syncope, and signs of systemic congestion, underscore the progressive nature of CRHD and highlight the need for continuous clinical monitoring. Arrhythmias, particularly atrial fibrillation, and thromboembolic events, although less frequent, carry significant morbidity and mortality risks, emphasizing the importance of preventive measures such as anticoagulation and rhythm management.

Preventive strategies, early diagnosis, and appropriate management—including pharmacologic therapy, surgical intervention, and patient education—are essential to reducing disease burden and enhancing the quality of life. Furthermore, continuous follow-up and systematic monitoring of symptom progression provide valuable insights into disease trajectory and help clinicians tailor interventions according to individual patient risk profiles.

In conclusion, a comprehensive understanding of the clinical manifestations of chronic rheumatic heart disease is essential for effective patient care. Timely recognition, accurate diagnosis, and evidence-based management strategies not only improve prognosis but also prevent severe complications associated with long-term valvular dysfunction. Future research should focus on refining diagnostic tools, evaluating intervention outcomes, and developing targeted preventive programs to reduce the global impact of CRHD.

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