Duke Criteria for Infective Endocarditis

The modified Duke criteria are a set of clinical criteria set forward to establish the diagnosis of infective endocarditis. Fulfilling the criteria, and a subsequently definitive diagnosis includes either having two major criteria, one major and three minor criteria, or five minor criteria. Additionally, diagnosis can be made if there is active endocarditis, along with histology or culture of a cardiac vegetation, an embolized vegetation, or intracardiac abscess from the heart shows microorganisms. The two major criteria are positive blood cultures for organisms causative of infective endocarditis and evidence of endocardial involvement through positive echocardiogram findings. The five minor criteria include having a known predisposing factor (such as a cardiac lesion or history of intravenous drug use), fever, vascular phenomena (evidence of embolism: Janeway lesions, emboli, pulmonary infarcts, conjunctival hemorrhage), development of immunologic pathologies (Roth's spots, glomerulonephritis, Osler's nodes, positive rheumatoid factor), or having microbiologic evidence that does not meet the major criteria.



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Major Criteria

Blood Culture Positive

2 Blood Cultures with Positive Bacteria

One of the major criterion of the modified Duke criteria includes having a positive blood culture for typical infective endocarditis organisms (Strep viridans or bovis, HACEK, Staph aureus, and enterococcus). They must be obtained from two separate blood cultures, or be two positive cultures from samples drawn 12 hours apart, or all of three or a majority of four separate blood cultures (first and last sample drawn one hour apart). Additionally, Coxiella burnetii can fulfill the major criterion, if it is detected by at least one positive blood culture, or IgG antibody titer for Q fever phase 1 antigen, being greater than 1:800.

Endocardial Involvement

Echocardiogram with Valve Lesion and Regurgitation

This major criterion describes endocardial involvement via echocardiogram findings. This can be through observation of an oscillating intracardiac mass on valve or supporting structures, the finding of an abscess, seeing a new partial dehiscence of a prosthetic valve, or the finding of a new valvular regurgitation.

Minor Criteria

Fever

Fever-beaver

One of the minor Modified Duke criteria is the presence of a fever greater than 38.0 degrees C (100.4 degrees F).

Immunologic Phenomena

Immune-moon

Another minor criterion is the development of immunologic phenomena, such as glomerulonephritis, Osler's nodes, Roth's spots, or the presence of rheumatoid factor on serum lab evaluation.

Vascular Phenomena

Vessels

One minor criterion of the Modified Duke criteria is the presence of vascular phenomena. These include evidence of arterial emboli, pulmonary infarcts, conjunctival hemorrhages, and Janeway lesions.

Predisposition

IV Drug Abuse

A known predisposition to endocarditis is another minor criterion. This includes having a known, previously diagnosed cardiac lesion, or a history of intravenous drug use.

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Microbiological Evidence

1 Positive Blood Culture

Microbiological evidence of infection is another minor criterion of the Modified Duke criteria. The presence of a positive blood culture that does not meet a major criterion, as noted above, or serologic evidence of infection with organism consistent with infective endocarditis, but not satisfying major criterion, counts as fulfilling this minor criterion.

Diagnosis

Two Major Criteria, or

2 Major

Infective endocarditis is diagnosed if the patient has two major criteria.

One Major and Three Minor Criteria, or

1 Major and 3 Minor

Infective endocarditis is diagnosed if the patient has one major and three minor criteria.

Five Minor Criteria

5 Minor

Infective endocarditis can be diagnosed if the patient presents with five minor criteria.

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