PRIMEVIEW

INFECTIVE ENDOCARDITIS

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Infective endocarditis (IE) results from infection — usually bacterial — of the endocardial surface of the heart and most commonly affects the heart valves. As a multisystem disease, IE can have cardiac, pulmonary, renal and neurovascular manifestations, among others.

EPIDEMIOLOGY

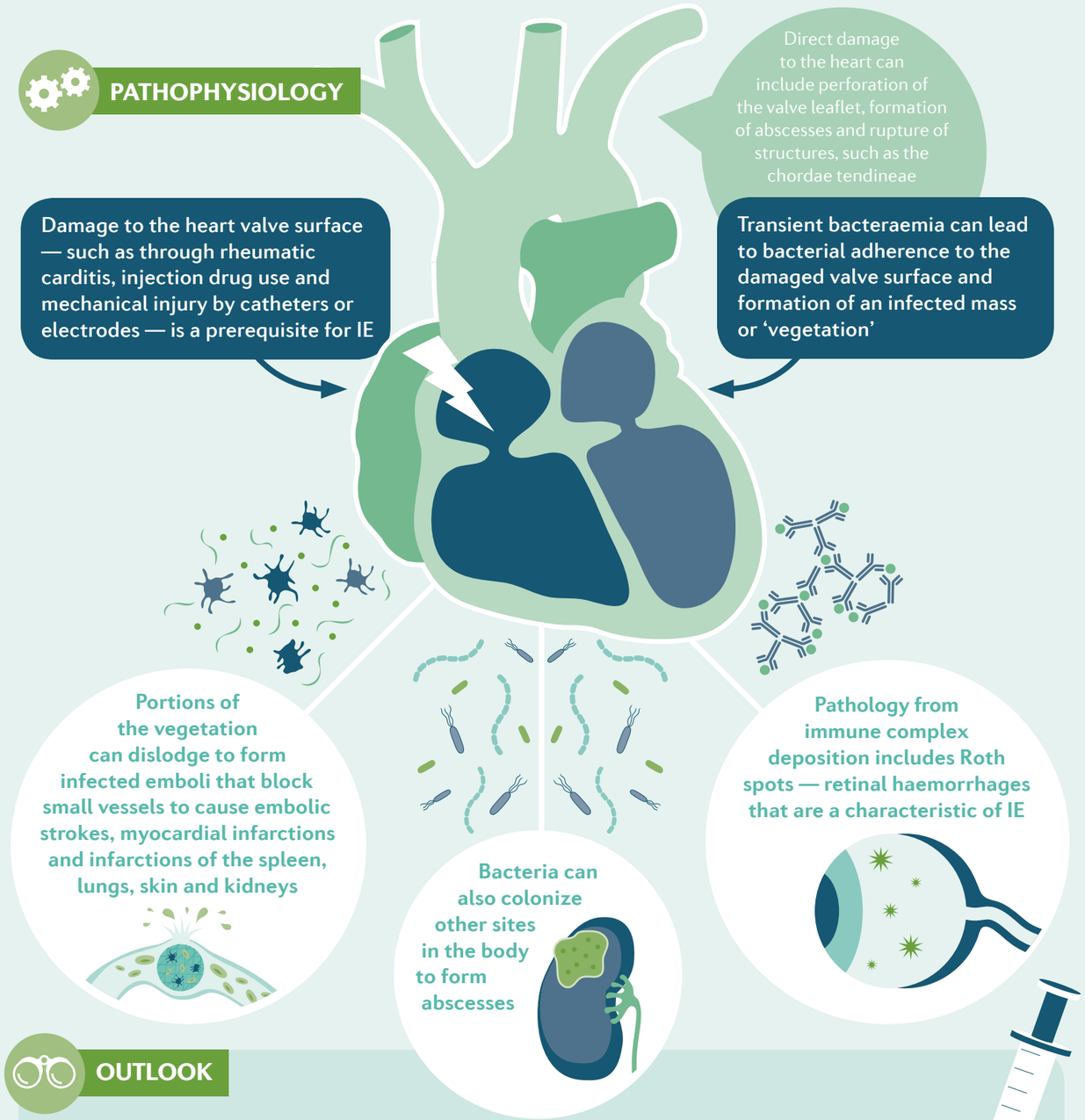
IE can be caused by various organisms, with streptococci and staphylococci accounting for ~80% of cases. Rheumatic heart disease is an important risk factor in developing countries; consequently, in these regions, IE is most common in young adults. By contrast, in high-income countries, the key risk factors for IE disproportionately affect older individuals and, as a result, more than half of those with IE in this setting are >50 years of age. These risk factors include degenerative heart disease and health system contact, such as the use of prosthetic heart valves, cardiac devices and intravascular catheters.

PREVENTION

Efforts to prevent IE mainly focus on preventing the development of transient bacteraemia. Although antibiotics have been used to prevent bacteraemia resulting from dental, gastrointestinal and genitourinary procedures, the efficacy of this approach has come into question in recent years. Guidelines in the United States, the United Kingdom and France now recommend against routine antibiotic prophylaxis for most patients.

Whether the cessation of antibiotic prophylaxis has led to an increase in IE incidence is unclear. Large prospective randomized trials are required to resolve this issue.

PATHOPHYSIOLOGY

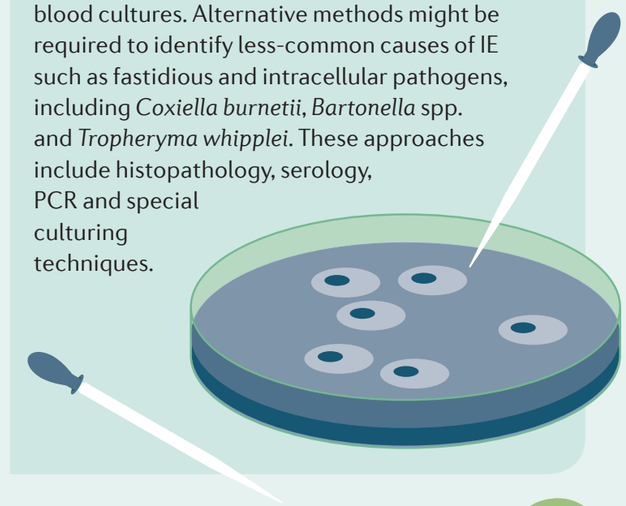


OUTLOOK

Efforts are currently underway to develop vaccines that can prevent the most common bacterial causes of IE. Both passive and active immunization strategies have been tested in clinical trials for the prevention or treatment of staphylococcal infections, which have produced mixed results; further trials are ongoing. In the future, new imaging modalities might improve the diagnosis of IE and the development of more-effective antibiotics might lead to shorter and/or oral treatment regimens for left-sided IE.

DIAGNOSIS

The modified Duke criteria comprises a combination of major and minor microbiological, echocardiographic and clinical features, and are the gold standard for IE diagnosis. In most cases, a causative pathogen can be identified using blood cultures. Alternative methods might be required to identify less-common causes of IE such as fastidious and intracellular pathogens, including *Coxiella burnetii*, *Bartonella* spp. and *Tropheryma whipplei*. These approaches include histopathology, serology, PCR and special culturing techniques.



MANAGEMENT

Management of IE should involve a multidisciplinary team that includes an infectious disease specialist, a cardiologist and a cardiac surgeon. All patients should receive antimicrobial therapy tailored to the pathogen responsible for causing their IE, with left-sided vegetations typically requiring long durations of intravenous antibiotic therapy owing to their high bacterial densities. Patients who are at high risk of embolic complications, have heart failure or have an uncontrolled infection should receive surgery to repair or replace their damaged heart valve.

Although rare, IE is a life-threatening disease and has a mortality rate of ~25% even with the best care

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