Clinical update no. 540

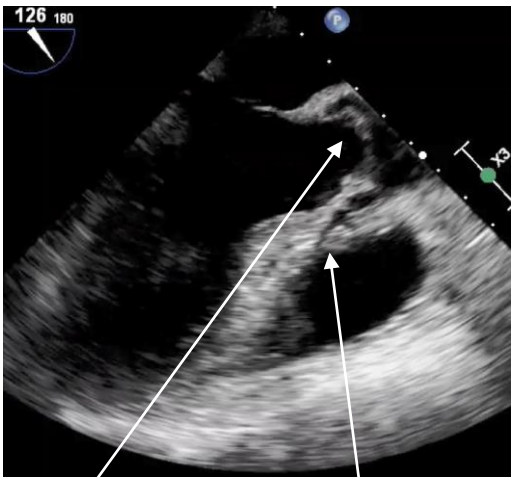
3 July 2019

Case 33yr-M referred from GP with pitting oedema, dyspnoea and dry cough. Generally well previously, with heavy drug use. There was a known bicuspid aortic valve

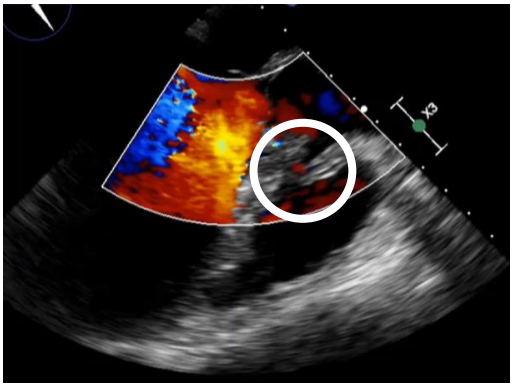
HR 122 bpm, RR 22, temp 37.2 C, BP 130/85, O2 sats 96% oximetry on air.

Harsh pan systolic murmur, with basal crackles. CRP 107, WCC 13.8, TSH normal. u/a +ve for blood. ECG: normal.

Trans-oesophegeal echo: hypoechoic at aortic root suggestive of abscess formation, with fistula; vegetations on valve.



Aortic valve Fistula at aortic root



Abdominal CT showed splenic abscess from septic emboli, but no source for endocarditis.

Blood cultures grew *Enterococcus faecalis* x3.

After initial broad cover he was managed with ampicillin and ceftriaxone IV with surgery for aortic valve replacement when stabilised.

The CXR did not show pulmonary oedema or consolidation despite the findings on ausculttaion. The peripheral oedema was likely from elevated right sided pressures from the aortic root fistula.

Although clearly unwell when referred, there had been several presentations to the GP over the previous month with non-specific symptoms and weight loss attributed to a viral infection, with empiric antibiotics given. Endocarditis is always on the differential with an ongoing infective illness, especially with a murmer. SBE is often subacute in onset. Blood cultures and echo can clarify.

Seminar

Infective endocarditis

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Modified Duke criteria for diagnosis of infective endocarditis

Duke criteria were derived for research and not intended for clinical diagnosis, so judgement is required.

Diagnostic criteria are pathological (histology, culture of vegetation or abscess), or clinical.

Major clinical criteria

Blood cultures (≥2 positive)

Endocardial involvement (findings on echo, new valvular regurgitation)

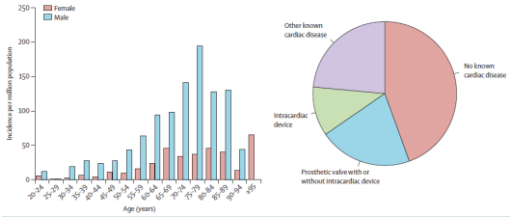
Minor clinical criteria

Predisposition (heart condition, IVDU), fever, vascular (embolic, mycotic aneurysm, ICH, other); immunologic (glomerulonephritis, Roths spots, other).

Diagnosis of infective endocarditis is definite in the presence of one pathological criterion, or two major criteria, or one major and three minor criteria, or five minor criteria

Diagnosis of infective endocarditis is possible in the presence of one major and one minor criteria, or three minor criteria

There is increasing prevalence in older age groups and with indwelling cardiac devices. *Staphylococcus* is the most common organism (due to bacteraemia from invasive procedures) and not *Streptococci* as previously. 3 sets of blood cultres will pick up >95% of bacteraemia. There is no need to time sampling with fever. About 10% are culture –ve, including non bacterial endocarditis with cancer. Selected serology with identify the cause in some.



Panel 1: Proportion of cases of infective endocarditis caused by different microorganisms from a French population-based cohort of 497 patients[2]

Staphylococci
Staphylococcus aureus: 26·6%
Coagulase-negative staphylococci: 9·7%

Streptococci and enterococci
Oral streptococci: 18·7%
Non-oral streptococci: 17·5%
Enterococci: 10·5%
Other: 1·6%

Clinical features

Presentation is non-specific and broadly similar to when Osler noted "Few diseases present greater difficulties in the way of diagnosis … ". There is fever in about 90% and a murmur in 85%.

S aureus bacteraemia is associated with endocarditis in about 25 % of cases, and warrants an echo. The sensitivity and specificity of any one sign is low.

Investigations are nonspecific, with raised inflammatory markers and often blood on u/a.

Echocardiography

TTE has sensitivity of 75%, with TOE needed if ongoing concern.

Management

Follow local ID advice, with regimens largely empiric with little good trial data.

Native valve endocarditis—indolent presentation

Amoxicillin (2 g, every 4 h, intravenously) + gentamicin* (optional; 1 mg/kg of actual bodyweight)

Vancomycin may replace amoxicillin if septic or bacterial resistance, or if a prosthetic valve.

eTG complete by Therapeutic Guidelines

Initial once daily gentamicin is recommended empirically to cover Gram-negative sepsis, then as guided by cultures. For ongoing use give multiple daily dosing.

Duration is about 4-6wk, at least 2wk as inpatient then possibly home based. Oral regimens may be suitable in select cases.

ID input will guide treatment.

Partial Oral versus Intravenous Antibiotic Treatment of Endocarditis

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CONCLUSIONS
In patients with endocarditis on the left side of the heart who were in stable condition, changing to oral antibiotic treatment was noninferior to continued intravenous antibiotic treatment.

Surgery

Surgery is required in about half, for valve dysfunction and heart failure, uncontrolled infection and prevention of embolism. The optimal timing of surgery is unclear.

Prevention of infective endocarditis

Reduction of bacteraemia is important, such as for invasive procedures.

Antibiotic prophylaxis has evolved, notably for dental procedures for which it is not routine, but restricted to high risk groups,: history of infective endocarditis, prosthetic valves, and cyanotic congenital heart disease.

Prophylaxis is not required for urogenital or GI procedures.