CASE REPORT

Innocent victim of a localised outbreak: legionella endocarditis

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Legionella pneumophila endocarditis is extremely rare. The case of a fit 26 year old man who had previously undergone homograft aortic root replacement is reported. He was admitted with legionella pneumonia during the recent localised outbreak but went on to develop endocarditis. His aortic valve was replaced with a mechanical valve and he made an uneventful recovery. Public health issues and diagnosis in susceptible patients during localised outbreaks are discussed.

A 26 year old man was admitted to his local hospital with a microbiologically confirmed diagnosis of *Legionella pneumophila* pneumonia contracted during an outbreak in Cumbria. Significant medical history included congenital ventricular septal defect with aortic valve prolapse. Previous surgical procedures included closure of the ventricular septal defect and repair of the prolapsing aortic cusp in 1986. This was followed by aortic root replacement with a homograft for worsening aortic regurgitation in 1994. He was asymptomatic until recently and his most recent echocardiogram did not show any aortic regurgitation.

Soon after his admission with legionella pneumonia, he required admission to an intensive therapy unit for respiratory failure requiring ventilation, where his stay was further complicated by the development of severe aortic regurgitation, disseminated intravascular coagulation, and microemboli affecting his digits. A diagnosis of legionella endocarditis was established and he was treated with intravenous clarithromycin and rifampicin. He made a good recovery. He was referred for urgent repeat aortic valve replacement. An echocardiogram showed severe aortic regurgitation with a dilated left ventricle (left ventricular end systolic diameter 7.0 cm) and near equilibrium of the aortic and left ventricle pressure at the end of diastole.

He underwent repeat aortic valve replacement. Intraoperatively, complete destruction of both left and right cusps of the aortic valve were noted. However, there was no evidence of active infection or aortic root involvement. The valve leaflets were excised and the valve was replaced with a 23 mm St Jude Medical (St Paul, Minnesota, USA) mechanical valve. The cultures of the excised leaflets were negative, which is consistent with a prolonged course of antibiotics. He made an uneventful postoperative recovery. An echocardiogram before discharge showed no aortic regurgitation.

DISCUSSION

This case is unusual in that the endocarditis was caused by a rare organism, *L pneumophila*, on an aortic homograft. Septic embolic complications are an atypical feature of legionella endocarditis. This report highlights the importance of public health issues in times of localised outbreaks, especially to the patients at increased risk.

Current estimates suggest an incidence of 1.7–6.2 per 100 000 person years of community acquired infective endocarditis in

the USA and western Europe.¹ *Streptococcus viridans* has recently been surpassed as the most common causative organism by *Staphylococcus aureus* and this is likely to be due to a number of factors. Largely, these factors are increased longevity of patient populations at large, increased incidence of degenerative valve disease, increased numbers of prosthetic valve operations, and increased exposure to nosocomial infections.¹ Furthermore, as highlighted by this case, the expanding population of young adults with congenital heart disease is a factor.

Legionella endocarditis is a rare form of infective endocarditis, with the first reported case in 1984 in a patient with a prosthetic valve.² The exact incidence of legionella endocarditis is difficult to estimate and in terms of overall incidence it is less even than the incidence of endocarditis caused by HACEK organisms (*Haemophilus aphrophilus*, *Actinobacillus actinomycetemcomitans*, *Cardiobacterium hominis*, *Eikenella corrodens*, *Kingella kingae*) and culture negative cases. These collectively account for 0–15% of native valve endocarditis in patients aged 16–60 years and for 3–7% of patients with a prosthetic valve endocarditis in the same age group.¹ But within this subgroup *L pneumophila* accounts for a very small number of cases.

Legionella endocarditis, in common with other forms of endocarditis, presents with the typical features of a low grade fever, night sweats, weight loss, and malaise. Other features are anaemia, thrombocytopenia, and sometimes disseminated intravascular coagulation. Interestingly very few cases of legionella endocarditis are associated with embolic phenomena causing some to conclude that emboli are not a feature of this legionella endocarditis.³

In this case reported here, legionella endocarditis occurred in a patient with aortic homograft. Previously prosthetic valve legionella endocarditis has been reported.³ Furthermore, in our case, the patient contracted legionella pneumonia during a regional outbreak of the disease and subsequently developed legionella endocarditis. Interestingly, this patient did develop microembolic lesions in his feet.

Additionally, this case raises important public health issues for patients at increased risk, such as those with congenital heart disease or acquired valvar heart disease during infectious disease outbreaks. There were 120 confirmed cases of *L pneumophila* pneumonia in Cumbria between July and August 2002. Of those affected, 75% were over 55 years of age.⁴ Recent data suggest that the mean age of those with infective endocarditis has shifted from 30–40 years in the preantibiotic era to between 47–69 years currently.^{1 5} This has implications for all infectious disease outbreaks within the community, as the majority of patients affected are consistently older than 55 years.

Finally, the affect of localised infectious disease outbreaks on the small population of patients who have congenital heart disease must be considered. With improved surgical and medical management, the life expectancy of this subgroup of patients has risen and therefore they now constitute a significant population. Current estimates by the European Cardiac Society working group suggest that the 80–85% of patients with congenital heart disease now surviving to adulthood (16 years) translates to 2500 new cases per annum when

compared against the birth rate.⁶ These patients have greatly increased cardiac vulnerability in the face of infection generally and especially during localised infectious disease outbreaks. Therefore, the health care professionals caring for these patients need to be aware of these difficulties and to monitor and treat these patients aggressively.

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