

Streptococcus Endocarditis after Tongue Piercing

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While body piercing has been practiced for many centuries, the popularity of this body art has increased vastly in recent years. It is estimated that up to 51% of college-age individuals in the United States have ear piercing or other forms of piercing or tattoo. Although perceived as a relatively safe practice, medical complications, mostly resulting from

While body piercing has been practiced for many centuries, the popularity of this body art has increased tremendously in recent years. It has been estimated that up to 51% of college-age individuals in the United States have ear piercing or some other form of piercing or tattoo (1). Although perceived as a relatively safe practice, medical complications that mostly result from bleeding and infections occur in 17% of all cases after piercing (1). Oral body piercing in particular has significant potential risk, given the known relationship between oral flora and bacteremia. Herein is reported the case of a patient who developed native mitral valve endocarditis after tongue piercing, leading to acute mitral valve insufficiency that required valve replacement.

Case report

A 30-year-old woman with a history of nicotine abuse and single alcohol intoxication was admitted from the authors' hospital emergency department with a four-week history of flu-like symptoms, including intermittent fever, rigors, chills and fatigue, suddenly accompanied by a shortness of breath and thoracic pain since the first day. The patient had no other medical problems, and previously had been in excellent health.

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On examination the patient appeared ill, with a fever of 38.3°C, a pulse of 135 beats/min, and blood pressure 89/60 mmHg; she was also tachypneic. Cardiac and pulmonary auscultation appeared normal, while a further physical examination showed no aberrations, other than an increased liver size. The white blood cell count was $14 \times 10^9/l$ and C-reactive protein 100 mg/l. Cultures were taken from the blood, urine, and sputum. A blood gas analysis showed mild respiratory distress, and the patient was administered oxygen (10 L, 100%) via a mask.

Initially, the patient underwent computed tomographic angiography which demonstrated a suspected pulmonary embolism, minimal pleural effusion, and a pulmonary lesion in the right under-lobe but no pulmonary embolism. She was admitted to the internal medicine ward under suspicion of atypical pneumonia, and treated intravenously with fluids and antibiotics (gentamicin, 3 mg/kg; penicillin G, 2×10^6 units, according to the protocol of the Department of Microbiology at the time). During the evening, the patient became respiratory unstable and was transferred to the intensive care unit for intubation and monitoring.

A diagnosis of cardiogenic shock was made, and an intra-aortic balloon pump placed in an emergency situation. Subsequent transesophageal echocardiography demonstrated the presence of a large vegetation on the mitral valve, with prolapsed leaflets and massive mitral valve insufficiency. No other vegetations were visualized.

Hetero-amnesic questioning revealed a problem of paradontitis caused by chronic irritation after tongue piercing. The piercing had been removed some weeks

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before admission to the hospital, and an inspection of the oral cavity had shown no signs of irritation. Neither had the patient any recent history of dental work or other procedures.

The patient underwent emergency cardiac surgery, whereupon a mitral valve displaying the distinctive signs of endocarditis with rupture of the subvalvular structures was visualized. No extravalvular extension of endocarditis in the form of abscesses was seen. The mitral valve was replaced with a CarboMedics® mechanical prosthetic valve.

Gram staining and cultures of the native valve leaflets removed intraoperatively demonstrated an alpha-hemolytic *Streptococcus*, and antibiotics were continued for two weeks (gentamicin) and six weeks (penicillin G). After an uneventful recovery, the patient was discharged home.

Discussion

Oral body piercing has many known adverse consequences that, normally, are minor in nature and include chipping of the teeth, irritation of the tongue, and local infectious complications. In general, body piercing is not regarded as a risk factor for endocarditis. Although several case studies have been reported linking body piercing to infective endocarditis, only three cases have been described relating native valve endocarditis with piercing of the tongue. Tronel et al. (2) described a case of native valve endocarditis due to *Neisseria* shortly after piercing of the tongue, whilst in a second study a case was described of native valve endocarditis after tongue piercing caused by *Haemophilus parainfluenzae* (3). Most recently, Dubose and Pratt (4) reported a case of endocarditis after oral piercing in a young woman who exchanged her piercing with a male friend.

Although infective endocarditis can be managed with medical therapy, up to 50% of the cases are in need of surgical intervention for adequate treatment. Surgical intervention for endocarditis generally takes the form of valve replacement or repair, aortic root replacement and débridement. Absolute indications for surgical treatment include congestive heart failure (CHF) due to valvular dysfunction, peripheral or cerebral embolization, extravalvular extension of the infective process, persistent sepsis and progressive renal dysfunction (5).

Congestive heart failure is a common sequela of endocarditis, and occurs in 50% (mitral valve insufficiency) to 80% (aortic valve insufficiency) of cases. Studies have shown that surgical therapy for endocarditis complicated by severe CHF significantly improves survival over medical management (6). Early valve replacement in aortic valve endocarditis patients

with CHF leads to a favorable outcome when compared with delayed elective surgery (7). CHF due to mitral valve insufficiency may be stabilized with conservative measures, including afterload-reducing agents, digoxin, and diuretics, before elective surgery (8).

Embolic events are commonly observed in endocarditis, occurring in about 30% of cases, and usually resulting from vegetations of the infected valve leaflets or annulus. Surgery is usually performed in cases of recurrent emboli, despite appropriate antibiotic treatment, depending on the size of the vegetation identified (9). Because of an increased risk of embolization in patients with vegetations >10 mm in length, surgery must be performed in the presence of large vegetations (>10 mm) following one or more clinical or even asymptomatic embolic events, or when the presence of the large vegetation is associated with known predictors of a complicated course of endocarditis (CHF, persistent infection, abscess, prosthetic valve). Surgery may also be considered in the presence of very large (>15 mm) and mobile vegetations, even in the absence of previous embolism.

Extravalvular extension of endocarditis typically takes the form of an annular abscess, and commonly manifests as structural injury to the interventricular septum, conduction pathways, and fibrous structures of the heart. Several echocardiographic criteria have been established for the accurate identification of extravalvular extension abscesses, including: (i) an anterior or posterior aortic root wall thickness ≥ 10 mm; (ii) a perivalvular density ≥ 14 mm in the interventricular septum; (iii) a sinus of Valsalva defect or aneurysm; and (iv) a prosthetic valve 'rocking' motion. In the case of persistent or particularly severe infection, current guidelines recommend that surgery is performed when fever and bacteremia are evident for more than seven to 10 days, despite adequate antibiotic treatment (10).

Valve replacement in hemodynamically stable patients results in an initially favorable outcome in 80 to 95% of cases, with reinfection rates of 3 to 13% reported. Late mortality rates are significantly higher in the setting of native mitral valve disease and early prosthetic infections. All individuals engaging in the piercing of their body should be made aware of the risks that this form of body art might pose to their health.

Until further studies shed light on the relationship between piercing and endocarditis, prophylactic measures should be considered for those who feel compelled to undergo these procedures. In particular, patients with known cardiac abnormalities should be strongly advised against such practice while, in the case of piercing, prophylactic antibiotics are recommended for patients with congenital heart disease (11).

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