

Endocarditis caused by *Pasteurella multocida*

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P*asteurella multocida*, a small gram-negative coccobacillus, is primarily a pathogen in animals, but can cause a variety of infections in humans.¹ Infection usually follows a bite or contact with secretions from felines such as dogs or cats. Infection is usually followed by cellulitis, but the organism has been implicated in pneumonia, meningitis, liver abscess and osteomyelitis. Systemic infection is rare; only eleven cases of *P. multocida endocarditis* have been reported in the English literature. We report a case of *P. multocida endocarditis* in a Saudi patient who had frequent contact with sheep, but in whom there was no clear portal of entry of the organism. In addition, the patient had no co-morbid conditions and was not immunosuppressed. To our knowledge, this is the twelfth reported case of endocarditis by this unusual organism in the English literature. We review the previously reported eleven cases.

Case

A 50-year-old Saudi presented with a 3-week history of dyspnea, orthopnea, proxysmal nocturnal dyspnea, cough and scanty white sputum. There was no fever or other constitutional features, or other symptoms referable to other systems. The patient was a truck driver and had frequent contact with sheep, but could not recollect a bite or a skin lesion prior to presentation. He had no significant current or past medical history.

On physical examination, he was in respiratory distress with the following vital signs: respiratory rate of 23/min, pulse rate 100/min, blood pressure 120/60 mm Hg and a temperature of 38.9°C. He had splinter haemorrhages but no other peripheral signs of endocarditis. He was in sinus rhythm and the pulse was collapsing in character. The jugular venous pressure was elevated at 4 cm and he had signs of mitral and aortic regurgitation. Examination of the respiratory system revealed bilateral basal inspiratory crepitations. Examination of the abdomen, fundi and the central nervous system was unremarkable. There were no obvious skin lesions to suggest a recent or remote animal bite. He was not on any medications.

Investigations revealed mild leucocytosis at $12.0 \times 10^3/\mu\text{L}$, normal haemoglobin, and normal renal and hepatic function. A chest radiograph showed cardiomegaly with pulmonary oedema and the electrocardiogram showed sinus rhythm, left axis deviation and left ventricular hypertrophy. An echocardiogram showed dilated left ventricle and atrium. A large vegetation, noted at the non-coronary cusp, was freely moving in the left ventricular outflow tract. There was severe aortic regurgitation with aortic root abscess and mild mitral regurgitation. Blood culture grew *P. multocida* on four occasions. The organism was oxidase, catalase and indole positive and identification was confirmed by using API 20E (Bio Merieux, France). Screening was negative for the human immunodeficiency virus (HIV).

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Table 1. Endocarditis due to *P. multocida*: summary of cases described in English medical literature.

Case No.	Year of Publication	Age (year) & Sex	Animal Exposure	Valvular vegetation	Co-morbid condition	Outcome
1	1970 ²	10 / F	No	NR	NR	Recovered but died soon of uncertain cause
2	1977 ³	51 / M	-	AV	NR	Survived, required AVR
3	1983 ⁴	50 / M	Dog /sheep	NR	NR	Died
4	1989 ⁵	63 / F	Dog	AV	Glomerulonephritis	Recovered, required AVR*
5	1990 ⁶	17 / M	No	MV	Renal insufficiency	Died of intra cerebral hemorrhage
6	1992 ⁷	61 / M	Dog	AV	Polycystic kidneys	Died*
7	1996 ⁸	72 / F	Cat	AV Prosthesis	Liver cirrhosis	Survived
8	1997 ⁹	65 / M	Dog	AV	Prosthetic valve	Died*
9	1998 ¹⁰	65 / M	Dog	NR	Liver cirrhosis	Died
10	2002 ¹¹	48 / M	Dog	MV	Pre-existing MV stenosis	Survived. Required MVR
11	2003 ¹²	48 / F	Dog	AV	Liver cirrhosis	Survived, recurrent endocairditis after AVR
12	2005 (PR)	50 / M	Sheep	AV	No known co-morbid condition	Survived, required AVR

F=Female, M=Male, NR=No record, AV=Aortic valve, MV=Mitral valve, AVR=Aortic valve replacement, MVR=Mitral valve replacement, AVR = Aortic valve replacement, PR =Present report.

The patient was treated with penicillin, gentamicin and anti-failure measures. He underwent aortic valve replacement after four days of medical treatment. The histology of the diseased valve confirmed endocarditis although the culture was negative. He made an uneventful recovery and remains well after a two-year follow up.

Discussion

The case satisfied Duke's criteria for the diagnosis of endocarditis in having two of the major criteria and one minor criterion. Although *P. multocida* can be easily misidentified, the methods we used distinguished it from organisms such as *Haemophilus aphrophilus* and *Haemophilus parainfluenzae*. To our knowledge, this is the twelfth reported case of *P. multocida endocarditis* in the English literature.²⁻¹² Table 1 gives the details of the previously reported cases.

The organism is usually recovered from the nasopharynx or gastrointestinal tract of felines and is a component of oral flora in most mammals. Infection in man follows animal bite or contact with secretions. The most common sequelae are cellulitis, subcutaneous abscesses, and skin ulcers. Other less commonly affected organs include the bones and joints, and the oral and respiratory tract. Bacteremia is uncommon and endocarditis rarely

results from such bacteremia. In a series of thirteen cases with bacteremia, Raffi and his associates¹³ reported none with endocarditis. Culture of the excised valve in our case did not grow the organism. This is similar to the case reported by Lehmann et al³ and may be the result of the antibiotics the patient received earlier.

Patients with *P. multocida* infections often have other co-morbid conditions such as a chronic obstructive lung disease, bronchiectasis, chronic liver disease or immunosuppression. Our patient had no prior co-morbid state. In addition, he was not on any immunosuppressants nor was he positive for the HIV virus.

The organism is highly susceptible to numerous antibiotics including penicillins, cephalosporins, tetracyclines, and chloramphenicol. Penicillin is the drug of choice.¹⁴ Despite susceptibility to, and treatment with these readily available antibiotics, about half of the reported cases of endocarditis died and valve replacement was required in another one third. The outcome is probably related to the duration of illness and the rapidity with which diagnosis is made and treatment commenced. *P. multocida* is a recognized but rare cause of endocarditis, and although the organism is susceptible to many antibiotics, it can run a fatal course if not recognized early.

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