



Acute *Haemophilus parainfluenzae* Infective Endocarditis

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Abstract

Haemophilus parainfluenzae is a gram negative coccobacillus that is found in the normal flora of the mouth, it is a rare cause of infective endocarditis, and accounts for almost 3% of total endocarditis cases. Usually occurs in patients with poor oral hygiene, and pre-existing valvular lesions. Herein, we are presenting a case of *Haemophilus parainfluenzae* infective endocarditis with large size vegetations that led to valvular destruction and distant embolization in patient who had no history of structural heart disease or prior oral surgeries.

Keywords: Infective endocarditis; *Haemophilus parainfluenzae*; Embolization

Introduction

Haemophilus parainfluenzae is one of numerous pathogens that can cause infective endocarditis. It is part of group of microorganisms collectively known as HACEK, including, *H. aphrophilus*, *Actinobacillus actinomycetemcomitans*, *Cardiobacterium hominis*, *Eikenella corrodens*, and *Kingella kingae*. It counts for almost 3% of the total endocarditis cases and characterized by a sub acute course and large vegetation [1]. Despite the successful treatment, HACEK infective endocarditis still carries high morbidity and mortality, and associated with multiple debilitating complications [2]. Herein, we are presenting a case of acute *Haemophilus parainfluenzae* infective Endocarditis, which led to valvular destruction and distant embolization, requiring total valve replacement.

Case Presentation

This is a 29-year-old male with no significant past medical or surgical history, presented to emergency department with complains of feeling febrile and fatigue for one week. His symptoms started by having gradual onset of band like headache, 7 out of 10 in severity, constant, with no worsening or relieving factors. His headache was not associated with visual changes, peripheral numbness or weakness in his extremities. At the same time, he was feeling febrile, without any chills, rigor, or excessive sweating. He was also having generalized fatigue and tiredness with poor appetite. He was prescribed five days course of Tamiflu by his primary care physician with no improvement. Patient didn't have any history of recent travelling, sick patients contact, or history of tick bite exposure. He had no joint pain, or swelling, with no skin rash. He is nonsmoker; he drinks alcohol occasionally and denied any intravenous drug use. He is married and monogamous with his wife. He is currently a student, and lives with his family.

In the emergency department, his blood pressure was 125/74 mmHg, heart rate 135 beats/min, respiratory rate 16 cycle/min, temperature 104 F, and pulse oxygenation 98% on room air. He lying comfortably in bed, with no distress or pain, he was oriented to time, place, and person. A grade 3/6 pan-systolic murmur was noted at the 5th left mid-clavicular line, with no radiation. He had normal heart sounds, with no rubs or gallop. No skin rash, joint tenderness, or joint swelling noted. Meningeal signs were negative. His lung, abdomen, and neurology exams were unremarkable. Initial laboratory results summarized in (Table 1). He was tested negative for the following: *Legionella pneumophila*, Lyme titer, influenza A&B, *Chlamydia trachomatis*, and *Neisseria gonorrhoeae*. His blood culture came back positive for *Haemophilus parainfluenzae*. Urinalysis was unremarkable. His chest X-ray showed no infiltrates, with no cardiomegaly or pleural effusion. Electrocardiography (EKG) showed normal sinus rhythm, QT/QRS/PR intervals were within normal limit, with no evidence ST segment changes. Splenic infarction was noted on Computerized Tomography (CT) scan of abdomen. A transthoracic echocardiography showed evidence of moderate to severe mitral valve insufficiency, with mitral valve vegetation on the mid leaflet, measured 1.9 cm × 0.9 cm, and another vegetation noted on the mitral valve's posterior leaflet, measured 0.6 cm × 0.4 cm (Figure 1).

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Table 1: Laboratory results.

| Laboratory data | Values | Normal values | Laboratory data | Value | Normal values |
|-----------------|------------|---------------|------------------|------------|---------------|
| WBC | 8.2 K/ul | 4-10 k/ul | Serum creatinine | 0.77 mg/dl | 0.6-1.1 mg/dl |
| HGB | 12.6 gm/dl | 14-17 gm/ul | BUN | 5 mg/dl | 5-25 mg/dl |
| Platelet | 584 k/ul | 15-35 k/ul | ESR | 74 mm/hr | 0-22 mm/hr |
| AST | 28 IU/l | 10-40 IU/l | CRP | 18 mg/dl | <3 mg/dl |
| ALT | 82 IU/l | 10-60 IU/l | TSH | 2.381 u/MI | 0.5-5 u/MI |
| Lactic acid | 1.4 mmol/l | | | | |
| Procalcitonin | 4.32 ng/ml | | | | |

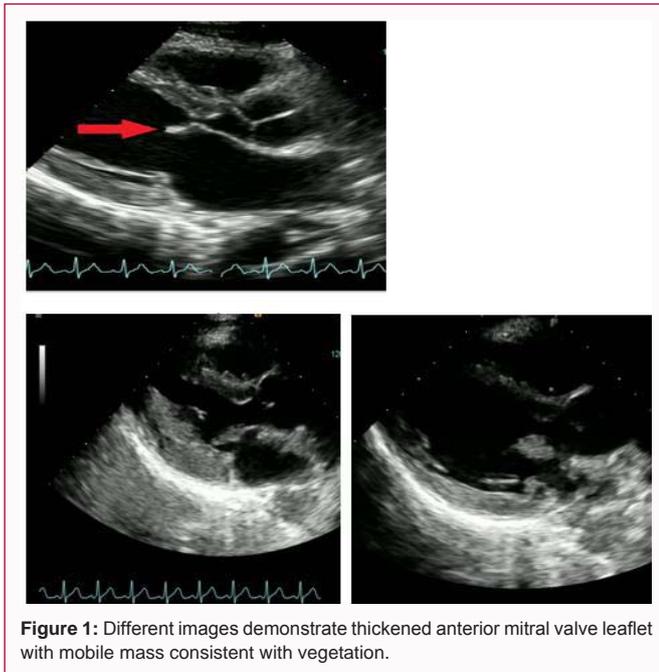


Figure 1: Different images demonstrate thickened anterior mitral valve leaflet with mobile mass consistent with vegetation.

The patient was started on intravenous ceftriaxone. Afterward, he underwent emergent mechanical mitral valve replacement. The mitral valve cultures were positive for *Haemophilus parainfluenzae*. He finished six weeks course of intravenous ceftriaxone. Repeat blood cultures were negative. On follow up care after the surgery, patient was asymptomatic. Follow up 2-D echocardiogram showed ejection fraction 60%, with normal functioning of the mechanical mitral valve, with no evidence of vegetations.

Discussion

Haemophilus parainfluenzae is a Gram negative coccobacillus that is found in the normal flora of the oropharynx. It is of part of multiple organisms collectively known as HACEK, including *Haemophilus parainfluenzae*, *H. influenza*, *H. aphrophilus*, *H. paraphrophilus*, *Actinobacillus actinomycetemcomitans*, *Cardiobacterium hominis*, *Eikenella corrodens*, and *Kingella* spp. Common features of the HACEK group are frequent colonization of the oropharynx, slow growth, and enhanced growth in the presence of carbon dioxide. Therefore, these organisms might not be detected in routine blood cultures [1].

Overall, HACEK microorganisms responsible for 1% to 3% of all infective endocarditis cases [2], usually found in patients with poor dentition, and in those with preexisting valvular lesions. Associated with large vegetation and high propensity for embolization [1,3]. In Our case, the patient was found to have a vegetation of 1.9 cm × 0.9

cm at its largest point, with evidence of distant embolization noted as splenic infarct.

The typical clinical pattern of *H. parainfluenzae* is that of a subacute endocarditis, developing after dental procedures in patients with preexisting valvular disease [4]. In our patient, the progression of infective endocarditis was over a week, with symptoms consistent with ill-defined malaise and feeling febrile. The patient was free of previous heart disease, and had not undergone any invasive, dental or other procedure.

The mitral valve is a common site of infection with *H. parainfluenzae* endocarditis, and vegetations tend to be large. The size of vegetation is adversely correlated with the patient's clinical outcome, and it is correlated with the tendency of occurrence of occlusive diseases associated [5,6]. In a comparative case-control study, the incidence of intracardiac vegetations was present in 68.8% of HACEK-IE and 77.1% in non-HACEK-IE. HACEK-IE vegetations tended to be both larger and more numerous when <1 cm [7].

In a retrospective study, 42 cases were recognized of having haemophilus endocarditis. The onset of the disease was most often sub acute in most of cases, median duration of disease before diagnosis was 19 days. Twenty-eight patients (66.7%) had extracardiac symptoms including petechiae purpura (10 patients), Osler's nodes (2 patients), Janeway lesions (3 patients), splenomegaly (9 patients), Roth's spots (4 patients), and one or more arterial embolic events (15 patients). One patient had mycotic aneurysm. In nine patients out of 15, emboli were present at the time of diagnosis. On the other hand, one patient had CNS emboli 12 days after the diagnosis, and one patient developed renal emboli 32 days after the diagnosis. Out of 25 patients with native valve disease, four had congenital heart disease. For 11 patients, atleast one vegetation was larger than 1 cm. Five underwent surgical valve replacement (two because of vegetation size and two because of uncontrolled infection) and five had embolic events. Haemophilus was isolated from blood specimens of all patients except for one. Surgical valve replacement was done for 18 patients; 16 of these surgeries were performed within the first 3 months. Of these 18 patients, 14 patients were infected with *H. parainfluenzae*; 3 with *H. aphrophilus*; and 1 with *H. paraphrophilus*. Thirteen patients (30.9%) had congestive heart failure; six of these patients underwent valve replacement surgery [8].

Summary

HACEK is a rare, yet a significant cause of infective endocarditis that might lead to significant valvular damage, the size of vegetations tends to be larger with higher incidence of distant embolization.

References

1. Das M, Badley AD, Cockerill FR, Steckelberg JM, Wilson WR. Infective

- endocarditis caused by HACEK microorganisms. *Annu Rev Med.* 1997;48:25-33.
2. Thuny F, Giorgi R, Habachi R, Ansaldi S, Le Dolley Y, Casalta JP, et al. Excess mortality and morbidity in patients surviving infective endocarditis. *Am Heart J.* 2012;164(1):94-101.
 3. Darras-Joly C, Lortholary O, Mainardi JL, Etienne J, Guillevin L, Acar J. Haemophilus endocarditis: report of 42 cases in adults and review. *Clinical Infectious Diseases.* 1997;24(6):1087-94.
 4. Brouqui P, Raoult D. Endocarditis due to rare and fastidious bacteria. *Clin Microbiol Rev.* 2001;14(1):177-207.
 5. Blair DC, Walker W, Sodeman T, Pagano T. Bacterial endocarditis due to haemophilus parainfluenzae. *Chest.* 1977;71(2):146-9.
 6. Ho HH, Cheung CW, Yeung CK. Septic peripheral embolization from haemophilus parainfluenzae endocarditis. *Eur Heart J.* 2006;27(9):1009.
 7. Ambrosioni J, Martinez-Garcia C, Llopis J, Garcia-de-la-Maria C, Hernández-Meneses M, Tellez A, et al. Hospital clinic infective endocarditis investigators. HACEK infective endocarditis: epidemiology, clinical features, and outcome: a case-control study. *Int J Infect Dis.* 2018;76:120-5.
 8. Darras-Joly C, Lortholary O, Mainardi J, Etienne J, Guillevin L, Acar J. Haemophilus endocarditis: report of 42 cases in adults and review. *Clin Infect Dis.* 1997;24(6):1087-94.