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Non-HACEK Gram-Negative Bacillus Endocarditis

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Background: Infective endocarditis caused by non-HACEK (species other than *Haemophilus* species, *Actinobacillus actinomycetemcomitans*, *Cardiobacterium hominis*, *Eikenella corrodens*, or *Kingella* species) gram-negative bacilli is rare, is poorly characterized, and is commonly considered to be primarily a disease of injection drug users.

Objective: To describe the clinical characteristics and outcomes of patients with non-HACEK gram-negative bacillus endocarditis in a large, international, contemporary cohort of patients.

Design: Observations from the International Collaboration on Infective Endocarditis Prospective Cohort Study (ICE-PCS) database.

Setting: 61 hospitals in 28 countries.

Patients: Hospitalized patients with definite endocarditis.

Measurements: Characteristics of non-HACEK gram-negative bacillus endocarditis cases were described and compared with those due to other pathogens.

Results: Among the 2761 case-patients with definite endocarditis enrolled in ICE-PCS, 49 (1.8%) had endocarditis (20 native valve, 29 prosthetic valve or device) due to non-HACEK, gram-negative bacilli. *Escherichia coli* (14 patients [29%]) and *Pseudomonas aeruginosa* (11 patients [22%]) were the most common pathogens. Most patients (57%) with non-HACEK gram-negative bacillus endocarditis had health care-associated infection, whereas injection drug use was rare (4%). Implanted endovascular devices were frequently associated with non-HACEK gram-negative bacillus endocarditis compared with other causes of endocarditis (29% vs. 11%; $P < 0.001$). The in-hospital mortality rate of patients with endocarditis due to non-HACEK gram-negative bacilli was high (24%) despite high rates of cardiac surgery (51%).

Limitations: Because of the small number of patients with non-HACEK gram-negative bacillus endocarditis in each treatment group and the lack of long-term follow-up, strong treatment recommendations are difficult to make.

Conclusion: In this large, prospective, multinational cohort, more than one half of all cases of non-HACEK gram-negative bacillus endocarditis were associated with health care contact. Non-HACEK gram-negative bacillus endocarditis is not primarily a disease of injection drug users.