An Indolent Presentation of *Staphylococcus aureus* Pericarditis Confirmed by Molecular Analysis

*Staphylococcus aureus* infection of the pericardium typically presents as an acute, often fulminant, disease. We report a case of subacute *S. aureus* pericarditis in which molecular analysis strongly suggested that the pericardial isolate was genomically identical with an *S. aureus* isolate cultured from the patient’s blood 54 days earlier.

A 50-year-old male with type II diabetes was admitted to the hospital because of diabetic ketoacidosis. Physical examination was notable for a temperature of 38.3°C and dehydration. On hospital day 3, culture of the single blood specimen drawn at admission yielded *S. aureus*. This result was attributed to skin contamination, and he was discharged from the hospital 9 days later.

One week after discharge, the patient noted the onset of pleuritic chest pain, fatigue, and malaise. Fifty-four days after the initial hospitalization, he was readmitted with worsening chest pain. He reported a 30–40 lb weight loss over the preceding 2 months. The patient was afebrile, with a pulsus paradoxus of 8 mm Hg. The cardiac examination revealed a three-component friction rub. The electrocardiogram was remarkable for sinus tachycardia with 2- and 4-mm PR segment depressions diffusely. Blood was drawn for cultures, and ceftriaxone therapy was begun.

On hospital day 2, cultures of blood, urine, vitreal fluid, and a deltoid abscess yielded *S. aureus*. Antibiotic treatment was changed to nafcillin and rifampin. A pericardial effusion was confirmed by transesophageal echocardiography. Culture of the pericardial fluid again yielded *S. aureus*.

Antibiotic susceptibilities were determined on Mueller-Hinton agar (Difco Laboratories, Detroit). All *S. aureus* isolates had identical antibiograms. The blood culture isolates obtained 54 days apart were available for genetic analysis. Preparation of chromosomal DNA for pulsed-field gel electrophoresis was performed after digestion with *Sma*I and *Ksp* I (Boehringer Mannheim, Mannheim, Germany), and the isolates obtained 54 days apart had identical gel patterns (figure 1).

Bacterial pericarditis has become a rare condition; the autopsy-proven prevalence declined from 0.77% to 0.26% after the introduction of antibiotics [1]. A recent study identified 33 hospitalized patients with purulent pericarditis over a 20-year period, yielding a cumulative incidence of 5.56 cases per 100,000 admissions [2]. In the postantibiotic era, *S. aureus* has become the leading organism cultured from pericardial fluid, increasing from 17% to 40% of all isolates [3].

The hallmark of bacterial pericarditis is the acuity of the onset of clinical manifestations, with a mean of 3 days of symptoms before hospitalization [4]. Fever is the most common complaint at presentation; it was reported in 96%–100% of cases in two large series [2, 4]. Anorexia and weight loss, which occurred in our case, are uncommon in patients with bacterial infection, although they occur in up to 85% of patients with tuberculous pericarditis [5].

Autopsy studies have shown concomitant endocarditis in 11%–15% of patients with pericarditis [1]. In this report, there was no evidence of endocarditis despite multiple transesophageal echocardiograms, which have a reported negative predictive value of 100% [6]. The lack of an endovascular source combined with the prolonged duration of the symptoms of pericardial inflammation supports the hypothesis that the pericardium was either seeded at the time of the initial hospitalization or that occult infection was already present. Unfortunately, the pericardial fluid culture was not available for molecular fingerprinting. However, the most likely explanation is that the *S. aureus* isolated from multiple sites represent end-organ infections following hematogenous seeding from a primary pericardial focus.

The possibility that this life-threatening infection could have been prevented with appropriate antimicrobial therapy at the time of the initial positive culture underscores the importance of drawing specimens for multiple sets of blood cultures. Growth of *S. aureus* in blood culture represents contamination in 25% of cases [7]. A diagnosis of bacteremia is supported by multiple positive cultures obtained from separate venipuncture sites.

Previous reports have described an insidious course for patients with bacterial pericarditis [8, 9]. To our knowledge, we report the first case in which molecular analysis was used to substantiate the clinical presentation of subacute pericarditis. The epidemiology of pericarditis has changed in the past 4 decades, with increasing numbers of nosocomial infections [4] and increasing numbers of infections in the elderly and in the immunocompromised [1]. We add the atypical presentation of *S. aureus* pericarditis as an indolent infectious process to this list. A high level of suspicion for bacterial pericarditis should...
be maintained by the clinician, regardless of disease duration or paucity of infectious symptoms.

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References

Gram-Negative Thyroid Abscess Resulting from Fine-Needle Aspiration in an Immunosuppressed Patient

Fine-needle aspiration (FNA) of thyroid lesions is a cost-effective, well-tolerated diagnostic technique that has a high degree of specificity and sensitivity and virtually no associated mortality and minimal morbidity [1]. There has been only one case report of a gram-positive thyroid abscess that resulted from FNA [2]. We describe the first case of gram-negative thyroid abscess that occurred after FNA in a patient who was receiving chemotherapy.

A 65-year-old man underwent echo-guided FNA of a 10-cm thyroid cyst in June 1996 while he was receiving adjuvant chemotherapy with 5-fluorouracil (500 mg/m²) for colon cancer. Four days later, he developed fever, chills, and neck soreness. He was treated for a common cold at a local clinic. In September 1996, he again developed a spiking fever, and his neck became rigid. He also complained of progressive respiratory distress and odynophagia. He was sent to our emergency department.

Physical examination revealed fever and stridor. The affected side of the neck was swollen and hard, although the skin was not erythematous, hot, or tender. The Adam’s apple was deviated to the contralateral side. The WBC count was 2,800/mm³ with a shift to the left. Results of thyroid function tests were normal. The patient underwent a semi-emergent thyroidectomy after nasal intubation over a flexible endoscope because of imminent upper airway obstruction. At operation, an indurated oval-shaped mass embedded in the thyroid gland, 8 × 6 × 6 cm in size, was removed. The mass was filled with frank pus (figure 1). Culture of the pus yielded Escherichia coli. The patient remained well and euthyroid postoperatively.

The thyroid gland is rarely the site of an acute bacterial infection because of its anatomical position, capsule, rich blood and lymphatic supply, and high iodine content [3]. Thyroid abscesses are easily confused with acute suppurative thyroiditis [3, 4]. Our patient’s thyroid abscess was a localized necrotic cavity containing purulent fluid within the gland. The striking features of this case include the long-standing subclinical infectious process without toxic manifestations, the portal of entry of the infection, and the relation between the gram-negative bacterial infection and the chemotherapy-induced immunosuppression. At operation, an inflammatory mass that had evolved from a previously infected thyroid cyst was found deeply buried in the thyroid gland. The neighboring structures, such as the retropharyngeal space, were not involved, which might explain the absence of acute systemic manifestations of the infection.