

Nontyphoidal Salmonellosis and Mycotic Aneurysm:

A Case Report

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Abstract

A 74-year-old male with atherosclerosis presented with severe nontyphoidal salmonellosis, and received outpatient therapeutic antimicrobial treatment. Nevertheless, within seven days he developed a mycotic aortic aneurysm, a serious but treatable complication. Its surgical management was successful.

Rapid formation of mycotic aortic aneurysm represents a rare complication of a common disease, nontyphoidal salmonellosis. Atherosclerosis seems to be an important risk factor. Extensive work-up for mycotic aneurysm by CT-scan in patients older than 50 years, with nontyphoidal *Salmonella*-positive blood cultures, especially in the presence of risk factors for atherosclerosis, is prudent. However, blood and stool cultures of these patients can be negative in 15% and 35% of cases, respectively. And the results of the blood cultures may be delayed. So it is sensible to extend the previous recommendation to patients older than 50 years, with typical symptoms of nontyphoidal salmonellosis and imminent aneurysmatic rupture, independent of previous results of CT-scans, and blood or stool cultures.

Key Words: Nontyphoidal salmonellosis, atherosclerosis, mycotic aneurysm, CT, pancreatitis, antimicrobial treatment.

Introduction

NONTYPHOIDAL SALMONELLOSIS represents an important public health problem in the United States. About 1,400,000 cases of nontyphoidal *Salmonella* infection occur annually, resulting in approximately 15,000 hospitalizations and 400 deaths annually (1). In general, nontyphoidal salmonellosis is a self-limiting disease. The therapeutic cornerstone is replacement of fluids and electrolytes. Antimicrobial therapy plays a role only in severe cases (2) and as a pre-emptive treatment (3) (Table). Independent of the severity of the primary disease, pre-emptive treatment aims to prevent complications, such as mycotic aneurysm, endocarditis, and other prolonged infections, in high-risk patients.

TABLE

Criteria and Indications for Severe Nontyphoidal Salmonellosis and Pre-emptive Antimicrobial Treatment, Respectively. (Only in These Two Cases Is Initial Antibiotic Prescription Recommended.)

Criteria for severe nontyphoidal salmonellosis (2)

1. Presence of high fever
2. More than 9 stools per day
3. Need for hospitalization

Reasonable indications for pre-emptive antimicrobial treatment

1. Children younger than 1 year (3)
2. Patients older than 50 years with atherosclerosis
3. Immunocompromised patients with
 - a. an organ transplant
 - b. AIDS
 - c. sickle cell disease or other hemoglobinopathies
 - d. endovascular or osseous prostheses

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Case Report

A 74-year-old man presented in April 2004, complaining of bloody diarrhea up to 10 times per day, and fever. He reported no vomiting. On examination, we found epigastric tenderness with regular bowel sounds. The digital rectal exam did not show any rectal abnormality. His axillar tempera-

ture was 37.7°C (99.9°F). The laboratory studies revealed a C-reactive-protein (CRP) of 192 mg/L (normal < 5 mg/L), but no leukocytosis. The abdominal CT-scan displayed no irregularity explaining our patient's clinical condition. The abdominal aorta showed atherosclerotic changes; its size and surrounding fat tissue were normal (Fig. 1). We intravenously replaced fluids and electrolytes. Since we suspected severe bacterial enteritis, the outpatient therapy was based on oral rehydration and ciprofloxacin (250 mg bid).

Seven days later, the patient returned with severe abdominal pain, bilaterally radiating to the back. We saw a febrile, hypertensive, hemodynamically stable patient. The abdomen showed neither tenderness nor abdominal pulsations or murmurs. In the laboratory studies, CRP (271 mg/L) and lipase (566 U/L, normal 13–60 U/L) were elevated. Suspecting acute pancreatitis, we repeated the abdominal CT-scan. This time it showed a saccular, infrarenal, abdominal aortic aneurysm of a maximal diameter of 5 × 4 cm (Fig. 2). The enhancing of the periaortic fat tissue and mesenteric root were consistent with imminent aneurysmatic rupture or inflammation. Blood cultures grew *Salmonella enteritidis*. The patient received emergency surgical intervention. We diagnosed an acute mycotic infrarenal aortic aneurysm, and continued the antibiotic therapy with ciprofloxacin, at a higher dosage (400 mg IV tid, later 750 mg po tid). The patient successfully survived a surgical complication including a postoperative paresis of the right leg. When last contacted, in September 2004, he still presented some problems with ambulation. Nevertheless, his general condition was good.

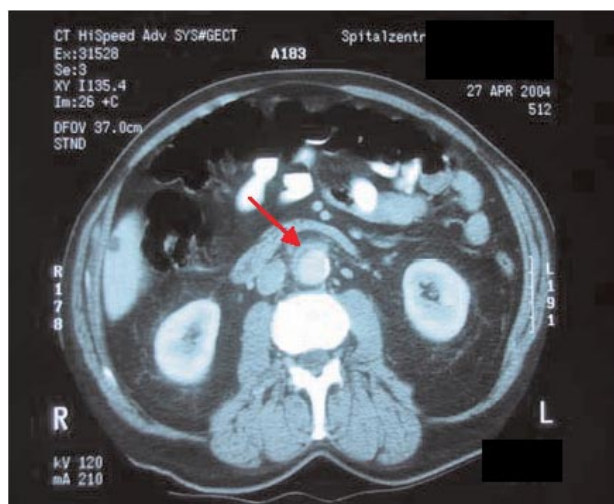


Fig. 1. Transverse abdominal CT-scan with contrast medium. Normal-sized abdominal aorta with atherosclerotic changes (see arrow).



Fig. 2. Seven days later, the transverse abdominal CT-scan with contrast medium shows aneurysmatic dilatation of the abdominal aorta (see arrow).

Discussion

We present the rapid evolution of nontyphoidal salmonellosis to a mycotic aneurysm in just seven days. The first time we saw our patient he suffered from isolated enteritis. We had no clinical or radiological evidence of early aneurysmatic development. We offered him intravenous replacement of fluids and electrolytes. Since our patient suffered from severe (likely bacterial) enteritis, and showed atherosclerotic changes of the abdominal aorta, we prescribed antimicrobial treatment. One week later he complained of new symptoms, namely severe abdominal and back pain. These are common symptoms of a mycotic aortic aneurysm (4–6) and pancreatitis. Our patient's elevation of serum lipase activity without any radiological signs for acute pancreatitis is a known finding in nontyphoidal salmonellosis, often with no clinical significance (7). However, the diagnosed rapid formation of a mycotic aneurysm is an occasional complication of *Salmonella* infection, with a high mortality rate (4–6, 8). Five percent of patients with nontyphoidal salmonellosis develop bacteremia (9). Only 10% of patients older than 50 years with nontyphoidal *Salmonella* bacteremia develop vascular infection (10). As in our case, of these most patients have pre-existing atherosclerotic disease at the site of the subsequently infected aneurysm (4). The abdominal aorta, especially the infrarenal segment, seems to be the blood vessel most frequently involved. CT-scan is the preferred imaging modality. It is widely available and fast, and may depict early periaortic findings (soft-tissue mass, stranding and fluid) (6).

Treatment of a mycotic aneurysm consists of timely surgical intervention with prolonged antibiotic therapy (4–6). Some authors recommend extensive work-up for mycotic aneurysm in patients older than 50 years with nontyphoidal *Salmonella*-positive blood cultures, especially in the presence of risk factors for atherosclerosis (10). However, blood and stool cultures of these patients can be negative in 15% and 35%, respectively (4). And the results of the blood cultures may be delayed. So it is sensible to extend the previous recommendation to patients older than 50 years with typical symptoms of nontyphoidal salmonellosis and imminent aneurysmatic rupture, independent of previous results of CT scans, and blood or stool cultures.

In summary, a common disease such as nontyphoidal salmonellosis may on occasion rapidly evolve into a mycotic aneurysm, a potentially fatal, but treatable complication. Its diagnosis remains a challenge—a challenge every physician may face.

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