

Case 15

A 65 year-old accountant was brought to the emergency room by her husband after she collapsed on the street 20 minutes after a penicillin injection had been administered in a physician's office.

She had a past history of angina and cardiac catheterization revealed advanced atherosclerosis.¹ She had no history of allergic rhinitis (hay fever), asthma, or atopic dermatitis. She had received penicillin four or five times in the past for respiratory infections without any adverse reaction until the last time during which time she noted a rash consistent with urticaria (hives), which resolved spontaneously. The day prior to admission she awoke with a sore throat and fever. On the morning of admission she was brought by her husband to her family physician. After examining her he prescribed an injection of a "penicillin." This was administered by the office nurse. The patient immediately left the office with her husband and started walking home. About 10-15 minutes later, she began to feel weak and became diaphoretic.¹ She complained of difficulty breathing and chest pain and slid to the ground. Her husband hailed a passing taxi and brought her to the emergency room in a trip lasting less than 10 minutes.

On examination, she was ashen in appearance and had cold, clammy skin. She had a thready pulse of 160 and a systolic blood pressure of 50. Her respiration was labored and there was wheezing throughout both lung fields. The remainder of her physical examination was negative. She was immediately given a subcutaneous injection of epinephrine and two wide-bore intravenous lines were inserted to administer fluids. She also received diphenhydramine (benadryl), an antihistamine. An ENT consultant was called, but a tracheotomy was not deemed necessary (Fig. 1).



Fig. 1. Acute laryngeal edema in a patient who died from an anaphylactic reaction to penicillin. An emergent tracheotomy might have been life-saving in this instance.

Within 20 minutes, her blood pressure and respiration had improved and over the course of the next few hours returned to normal levels. She was given additional diphenhydramine; oral prednisone was later instituted. An ECG (electrocardiogram) revealed new T-wave inversions²

Case 15, cont'd

and the patient ultimately sustained a small myocardial infarction. She had an uncomplicated post-myocardial infarction course. On the fifth hospital day, she had negative skin tests to benzyl penicilloyl-polylysine, potassium, benzylpenicillin and sodium benzylpenicilloate. She was discharged the following day.

¹Profuse sweating

²Electrocardiographic abnormality often reflecting myocardial ischemia or infarction

Questions for Case 15

- (1) Should she have received penicillin? Could the allergic reaction have been predicted or anticipated?
- (2) Should she have been allowed to leave the doctor's office so promptly?
- (3) What were the immunological events leading to this reaction? Why hadn't she reacted to penicillin when she first received it?
- (4) The patient received epinephrine, a potent vasoconstrictor, even though she had a history of ischemic heart disease. Was this a wise choice? Which of the therapeutic agents (i.e., Benadryl, prednisone, epinephrine) administered to the patient was critical in saving her life? Should prednisone have been given earlier?
- (5) Were any other allergic reactions apt to occur after the first day? What other types of allergic reactions can penicillin cause?
- (6) Why were her skin tests negative? Would later skin testing give the same result?
- (7) If the patient later manifested subacute bacterial endocarditis due to a penicillin-sensitive organism resistant to other antibiotics, could she receive penicillin? Would another β -lactam containing antibiotic (e.g., a cephalosporin) be an appropriate alternative?
- (8) What is urticaria and how does it develop? What other skin manifestations of penicillin allergy can occur?

Optional clinical question:

- (9) What are other possible etiologies of urticaria other than drug allergy?