

ORIGINAL ARTICLES

Anthrax in a patient with chronic urticaria

A case report

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Generalized urticaria frequently presents problems to the physician when causal factors are multiple, for instance, foods, drugs, and physical factors. A more perplexing situation occurs when a new disease develops on top of a pre-existing one having similar manifestations. The following case report presents such an unusual combination.

Case history

T. K., a healthy male, aged 26 years, had recurrent generalized urticaria and angioedema involving the hands, arms, feet, and face. He had received oxytetracycline hydrochloride for a sore throat two weeks prior to this outbreak.

Four weeks prior to receiving oxytetracycline therapy, the patient had developed exfoliative dermatitis of the genitals and a large reaction at the site of a penicillin injection given for an acute respiratory infection. The oxytetracycline was used before this condition had subsided, so it was not clear whether the urticarial lesions resulted from the oxytetracycline, the penicillin, or both. Antihistamines afforded no relief from the angioedema and urticaria, but prednisone, 15 to 20 mg. a day, made the condition tolerable. After six weeks of steroid therapy a reduction in dosage resulted in a recurrence of urticaria and angioedema.

When the patient was seen at this time in consultation, there was generalized urticaria and marked swelling of the hands, arms, and feet. There was no other personal or familial history of allergy. The patient had worked as a meat cutter for the past several years. No medi-

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cations except an occasional Bufferin tablet had been used since sulfonamides were prescribed for a respiratory infection about two years prior to this incident.

Penicillin had been used previously with no untoward effects. The patient was fond of milk and fowl, but ate a varied diet of fruits, vegetables, and highly seasoned foods with frequent indulgences in pizzas and "hoagies" or "submarine" sandwiches (Italian roll, lunch meats, cheese, onions, hot peppers, spices, oil, and lettuce).

Results of a physical examination were unremarkable except for the angioedema and urticaria. No foci of infection were noted in the nose or oral cavity. There was no discernible evidence of prostatic, genitourinary, gastrointestinal, pulmonary, or sinus diseases. Metabolic, endocrine, metazoal, or psychoneurotic manifestations were not apparent.

Avoidance of milk, fowl, and spicy foods was advised. Milk and fowl were proscribed not only because of possible food sensitivity but also because of their possible penicillin or other antibiotic content. Several injections of epinephrine and chlorpheniramine were administered, and large oral doses of antihistamines were prescribed.

Examination three days later showed increased edema of the right hand. Closer inspection revealed several minute blisters on the wrist. The temperature had risen to 100.2° F., and an epitrochlear gland was palpable on the affected extremity. Anthrax was suspected.

A blister was punctured, and a smear and culture were prepared for study. Erythromycin was prescribed, since this was one antibacterial the patient had never received before, and sensitization to it was considered less likely. Within two days the edema of the right hand had subsided and the patient was afebrile.

Examination of the smear revealed a large gram-positive square-ended encapsulated bacillus which was positively identified as the anthrax bacillus by a private laboratory.¹

The patient was hospitalized at the insistence of the health authorities. Again, results of a physical examination on admission were unremarkable except for generalized urticarial lesions. The hemoglobin level was 13.9 Gm. per 100 ml., with a 4.9 million red blood cell count. The white cell count was 8,300 with 9 band forms, 53 neutrophils, 28 lymphocytes, 9 monocytes, and 1 eosinophil. Sputum culture showed moderate growth of gamma streptococcus, few *Hemophilus influenzae*, and rare yeastlike organisms. Studies of the wound showed no organisms on Gram stain, but culture showed hemolytic *Staphylococcus aureus*, coagulation negative. Blood culture showed a *Corynebacterium* species, probably a diphtheroid bacillus, which was considered a contaminant.

After five days of erythromycin therapy the patient was discharged without further evidence of anthrax. The angioedema and urticaria continued to recur, and, therefore, an elimination diet was prescribed and a detailed food diary kept. Antihistamine drugs were to be used if local therapy failed to provide sufficient relief. The patient improved on this regime until he ate a combination of squash and tomato. Elimination of tomato from the diet temporarily cleared the skin. Eventually the removal of tomato, pork, fowl, egg, and beer from the diet resulted in more permanent relief. The patient then noted occasional outbreaks of hives when he became overheated following increased exertion or on prolonged exposure to warm environments. Tests to penicillin and oxytetracycline were not attempted, but clinical sensitivity to tomato and pork was corroborated by positive skin reactions.

DISCUSSION

In 1962, Cohen² described a patient with periorbital edema. This was treated as an allergic reaction with antihistamines, epinephrine, and hydrocortisone. It was not until necrosis of the adjacent tissues and septicemia were evident that other causes of edema were considered. It was then discovered that the malignant edema was a result of anthrax infection. Large doses of chloramphenicol, penicillin, and erythromycin by continuous intravenous drip for eighteen days and kanamycin intramuscularly for five days, in addition to a tracheotomy, were necessary to save this critically ill young man.

Thirteen cases of anthrax in humans, all cutaneous, were reported to the

Public Health Services Communicable Disease Center Anthrax Investigations Unit in Atlanta, Georgia, in 1962. Eight of the thirteen cases were agriculturally associated, whereas in previous years 70 per cent of the cases were industrial in origin. Of the five industrial cases, one occurred in a goat hair processing plant, and three were of persons in contact with raw imported hides. The use of anthrax vaccine in most goat hair processing plants has reduced the incidence of anthrax considerably in these areas.

Of the eight agriculturally associated cases, five occurred in a single outbreak in New Mexico in which the victims had contact with at least twelve cattle that died with symptoms consistent with anthrax. It is interesting to note that several other persons who ate uncooked meat from these infected animals did not show gastrointestinal anthrax, though spores of the anthrax bacillus were found.

Two other cases, in Pennsylvania and Mississippi, were also traced to dead cattle, while one case in Texas was associated with contact with a deer. In our patient, anthrax was positively identified clinically and bacteriologically prior to hospitalization. Prompt treatment with erythromycin cured the condition within several days, so that there was no further bacteriologic evidence of anthrax at the time of hospital admission.

Thus it is clear that localized areas of edema may be the result of various causes. Closer inspection of the lesions and a thorough history and physical examination should be evaluated before attributing the cause of such conditions to allergy alone or to any other causes.

SUMMARY

This case report describes the features of chronic recurring angioedema of the face, arms, hands, and feet and generalized urticaria, provoked by antibiotics, maintained by food sensitivities and physical allergy, and complicated by malignant edema produced by the spore-bearing anthrax bacillus.

REFERENCES

1. Wright, G. G.: The Anthrax Bacillus, in Dubos, R. S., editor: *Bacterial and Mycotic Infections of Man*, ed. 3, Philadelphia, 1958, J. B. Lippincott Co., p. 330.
2. Cohen, Murray L.: Human Anthrax. A Case of Malignant Edema With Septicemia, *New York J. Med.* 62: 2036, 1962.