

BRIEF COMMUNICATIONS

Anaphylaxis: A consideration in the differential diagnosis of shock

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Anaphylaxis rarely presents a difficult diagnostic problem. A history of exposure to an antigen is usually obtained and manifestations usually associated with anaphylaxis, such as dyspnea, wheezing, pruritus, urticaria, or angioedema are present.

The manifestations of anaphylaxis are variable, however, and therefore anaphylaxis can produce a diagnostic problem. Anaphylaxis was not suspected in a patient with sudden nausea, vomiting, shock, and electrocardiographic abnormalities until a second episode occurred during hospitalization. The diagnosis was not established initially because of the absence of symptoms commonly associated with anaphylaxis and the unreliability of the patient's history.

CASE REPORT

A 34-year-old Negro woman was admitted to the hospital approximately 50 minutes after the sudden onset of dizziness, nausea, vomiting, and then unconsciousness. Pulse rate and blood pressure readings were unobtainable and there was no response to verbal stimuli. An electrocardiogram revealed runs of bigeminy alternating with runs of sinus tachycardia. After intravenous administration of dextrose and metaraminol bitartrate, the blood pressure rose to 110/70 mm. Hg, pulse rate was 60 per minute, and the patient became alert. The admitting diagnosis was myocardial infarction with shock.

She was gravida iv, para iv. Hypertension had been present during her last pregnancy 7 years previously. Following that delivery, a lower left facial paresis was present which persisted unchanged. Drug ingestion was denied to 3 different examiners. Physical examination was unremarkable except for a central left seventh nerve paresis.

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Four hours later abdominal cramping pain developed and persisted for 3 days. Irregular vaginal spotting appeared on the second and third hospital days. She was then asymptomatic until the seventh hospital day.

Electrocardiograms revealed symmetrical T wave inversion in the lateral precordial leads that progressively improved to normal 4 days after admission.

Normal laboratory studies included: complete blood counts; urinalysis; serum oxalacetic transaminase and lactic acid dehydrogenase levels on 4 consecutive days; sodium, potassium, chloride, carbon dioxide combining power; amylase; blood urea nitrogen; creatinine; creatinine-clearance; calcium; phosphorus; creatine-phosphokinase; serological test for syphilis; lupus erythematosus preparations; cholesterol, serum protein electrophoresis; urinary 17-hydroxy-and 17-ketosteroids; urinary catecholamines; urinary 5-hydroxyindolacetic acid; multiple fasting blood sugars (before, during, and after a 72 hour fast); a 5 hour glucose-tolerance test; a lung scan; and multiple chest x-rays.

Because of a possible infection at a previous cutdown site, ampicillin was given orally on the seventh hospital day. Two hours later, nausea, intense generalized itching, dizziness, and then syncope occurred. Blood pressure readings and pulse rate were unobtainable until after the intravenous infusion of metaraminol in dextrose. No further syncope or itching occurred, but nausea, vomiting, lower abdominal cramping pain, and vaginal spotting persisted for the next 3 days. Electrocardiograms again revealed symmetrical T wave inversion in the lateral precordial leads that gradually returned to normal.

After this episode, the patient and her family were again interviewed intensively. The husband then remembered that 4 weeks prior to admission she had received an injection and pills for a sore throat. After 2 days the oral medication was stopped. On the night of admission, because of a scratchiness in her throat, one tablet was ingested approximately 10 minutes before the onset of her symptoms. The original medication was located and identified by the pharmacy as benzylpenicillin.

With appropriate emergency medication available, a cutaneous prick test with a solution of potassium penicillin G containing 10 units per cubic centimeter gave an immediate wheal with large pseudopod formation and erythema. Minimal but definite reactivity to cutaneous test with 0.1 unit of penicillin G per milliliter was observed. A cutaneous prick test with a solution containing 0.004 mg. per milliliter of ampicillin gave an immediate wheal and erythema response. An appropriate saline control was negative.

DISCUSSION

The manifestations of anaphylaxis may vary depending upon the animal species, the antigen, and its route of administration. In the guinea pig, with intravenously administered antigen, there is severe dyspnea and, at postmortem, the lungs are distended and bloodless.³ If the antigen is given subcutaneously or intraperitoneally, respiratory distress does not occur but protracted shock results in death after several hours.⁴ The mouse primarily has respiratory distress and prostration.^{5, 6} In the rabbit, mechanical plugging of pulmonary capillaries leads to pulmonary artery constriction, increase in pulmonary artery pressure, acute right ventricular dilatation, and circulatory collapse.⁷⁻¹⁰ In the dog, circulatory collapse, increased peristalsis, an infinitely prolonged clotting time, and bloody diarrhea frequently occur.^{11, 12} Clinically, anaphylaxis in man is not uniform and, at times, resembles that seen in guinea pigs, rats, mice, dogs, or possibly even rabbits.¹³

Autopsy data in man are limited. James and Austen¹⁴ reported 6 cases. In 5, respiratory distress dominated the clinical picture, and in these the predominant postmortem finding was obstructing edema of the upper respiratory tract and acute pulmonary emphysema. The sixth case differed, with chest pain and

shock predominating without obvious respiratory distress. Terminally, ventricular fibrillation was noted. Postmortem examination revealed no mechanism for death.

Nausea, vomiting, shock, and electrocardiographic changes were the dominant features in this case. Lack of symptoms more commonly associated with anaphylaxis caused a delay in diagnosis. Awareness that manifestations of anaphylaxis can be variable is important in the differential diagnosis of shock.

The degree of reactivity of the cutaneous tests to the high dilutions of penicillin in this patient indicates the marked degree of sensitivity to penicillin which may exist and the extreme degree of caution which must be used when skin testing patients with this antibiotic.

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