Scombroid Poisoning: Prompt Resolution of Symptoms with Cimetidine

Ingestion of tainted fish of the tuna class may result in the toxic erythema and histamine overload of scombroid poisoning. We report four cases in which prompt resolution of symptoms was achieved by administration of intravenous cimetidine, with minimal side effects. A search of the literature failed to locate previous reports of the efficacy of cimetidine in the treatment of this syndrome. [Blakesley ML: Scombroid poisoning: Prompt resolution of symptoms with cimetidine. Ann Emerg Med 12:104-106, February 1983.]

INTRODUCTION

The toxic erythema and other symptoms associated with scombroid fish poisoning have been recognized for many years, but to date only symptomatic and partially effective therapy has been advanced. We present the cases of four patients with classic scombroid poisoning in whom treatment with intravenous cimetidine resulted in a dramatic resolution of symptoms.

CASE REPORTS

Case Number One

A 19-year-old woman presented complaining of nausea, severe abdominal cramps, a severe throbbing headache, and a "burning sensation" of her skin. These symptoms began shortly after she ate a tuna sandwich, but no history of fish intolerance could be obtained. The patient thought that she might be in very early pregnancy. Vital signs were as follows: temperature, 36.8 C; pulse, 78; blood pressure, 150/100 mm Hg; and respirations, 20/min. On examination, the patient was in extreme distress, thrashing about in pain due to abdominal cramps, and intermittently grasping her throbbing head. She had a diffuse erythematous reaction that somewhat resembled sunburn on her face, chest, and upper extremities. She denied pruritus, complaining only of a burning sensation on her skin. The conjunctivae were markedly injected. The chest was clear and the abdomen soft.

She was treated with 50 mg diphenhydramine hydrochloride intravenously with no response. Within five minutes, 300 mg cimetidine was given intravenously over three minutes with nearly complete resolution of symptoms by the end of the infusion.

After a 90-minute observation period, the patient was discharged with 300 mg cimetidine and 50 mg diphenhydramine to take by mouth in three hours. Symptoms had disappeared entirely at the time of discharge. No follow-up information is available.

Case Number Two

A 20-year-old man presented approximately one hour after the woman in our first case. He had eaten the same tuna salad and developed nausea and a severe throbbing headache, as well as abdominal cramps. Vital signs were as follows: temperature, 36.5 C; pulse, 92; blood pressure, 110/62 mm Hg; and respirations, 20/min. Examination revealed markedly injected conjunctivae and a mild, diffuse erythema; no gross urticaria were noted. His chest was...
clear, his neck was supple, and his abdomen was soft.

The patient was given 300 mg cimetidine intravenously over two minutes, with complete resolution of symptoms within two to three minutes. Within five minutes, he was given diphenhydramine hydrochloride, 50 mg intravenously (for no apparent reason), with immediate recurrence of abdominal cramps and nausea that slowly subsided over the next 20 minutes. He was subsequently discharged asymptomatic with 300 mg cimetidine to take by mouth three hours. No follow-up information is available.

Case Number Three

A 17-year-old woman was seen because she had awakened with a severe burning sensation of her skin. She had eaten a tuna sandwich just before going to bed. When questioned, she admitted to mild pruritus, but denied any history of drug or fish intolerance. She also denied any gastrointestinal symptoms or headache. Vital signs were as follows: temperature, 37.2°C; pulse, 102; blood pressure, 152/82 mm Hg; and respirations, 30/min. Examination revealed giant, hive-like lesions.

Treatment with infusion of 300 mg cimetidine over approximately 30 minutes resulted in total resolution of symptoms by the end of the infusion. She was discharged with a two-day supply of oral cimetidine, 300 mg every six hours. No follow-up information is available.

Case Number Four

A 31-year-old man presented complaining of an itching-burning sensation in his skin, as well as shortness of breath, headache, palpitations, and nausea. These symptoms began approximately 15 minutes after he had eaten a seafood dinner consisting of fish of unknown type, scallops, raw oysters, shrimp, and crab. The patient had eaten this combination dinner in the same restaurant in the past but reported no previous reactions. Vital signs were as follows: temperature, 36.6°C; pulse, 120; blood pressure, 160/86 mm Hg; and respirations, 16/min. Physical examination revealed the face, thorax, and upper extremities to be flushed, appearing almost as if sunburned. No definite hives were observed, and there was no mucous membrane edema. The patient appeared to be moderately distressed, rubbing the involved skin for relief. The chest was reported to be clear. Results of the remainder of the physical examination were not recorded.

Epinephrine 0.2 cc (0.2 mg) subcutaneously and diphenhydramine 25 mg by mouth were initially given, but no response was noted and the patient reported no significant change in symptoms. Thirty minutes had elapsed when a cimetidine drip was started with 300 mg planned to run over 20 minutes. Twelve minutes after the drip began, a rash and the burning sensation abruptly disappeared. There was a simultaneous decrease in the pulse from 120/min, which it had been since admission, to 80/min with a concomitant decrease in blood pressure to 52/22 mm Hg. The patient became pale and nauseated, but placing him in a recumbent position immediately restored a pressure of 98/60 mm Hg and alleviated symptoms. The cimetidine drip was slowed and infused over one hour without further hypotension or recurrence of the histaminic symptoms. The patient was discharged on a short course of oral cimetidine; dosage and duration were not recorded on the chart, and the patient was lost to follow-up.

DISCUSSION

Scombroid poisoning is an unusual illness resulting from ingestion of tainted fish of the family Scombridae, which includes tuna, albacore, bonito, mackerel, and skipjack. Other dark-meat fish, including mahimahi (Dolphin fish) as well as kahawai and the Japanese saury, have also been implicated in scombrotoxism.1,3 The syndrome is thought to be related to histamine and saurine produced when these fish, which have a high natural free histidine level in muscle tissues, undergo spoilage.2 Several bacteria, including certain strains of Klebsiella pneumoniae and Proteus morganii, which have histidine decarboxylation activity, have been cultured from tainted fish.3 Foods other than fish have been implicated in a few cases.

A wide variety of symptoms have been described and generally have their onset within minutes to one hour after ingestion of the tainted food.2 A diffuse erythema of the face and upper body, somewhat resembling sunburn, is the most common presentation. Borders are often sharply demarcated, and the erythema is intensified by exposure to sunlight.1 At times the skin changes resemble giant, hive-like lesions, but most patients complain of feeling hot or of a burning sensation rather than pruritis (as in true urticaria). The conjunctivae are often markedly injected, and many patients have a severe, throbbing headache, palpitations, nausea, abdominal cramps, and diarrhea. Vomiting, dryness of the mouth, urticaria, angioneurotic edema, and bronchospasm have been reported.1 The syndrome is seen commonly where raw tuna is eaten as a Japanese delicacy, but severity of symptoms may vary considerably among people eating the same tainted fish. Cooking does not eliminate the toxin, and most cases are related to improper handling of raw fish.4 The entire syndrome, although superficially resembling an allergic reaction, is truly a reaction to toxins present in tainted food products and, therefore, patients should not be told that they have an allergy to any particular food product.

The symptoms of scombroid poisoning generally are self-limited, subsiding within eight to ten hours if not treated; but most cases treated with antihistamines become asymptomatic within two to three hours.1 In the four cases presented, administration of intravenous cimetidine resulted in complete and rapid alleviation of symptoms with minimal adverse reactions. One patient [Case 4] did suffer a mild hypotensive episode that responded to postural manipulation. This episode coincided with the disappearance of his histaminic symptoms. We can only speculate as to the etiology — blocking of histaminic support of blood pressure versus a direct effect of cimetidine. He was one of the two patients who received a slow drip of cimetidine rather than a bolus over two to three minutes. He also had previously received epinephrine (30 minutes before the hypotension), which none of the other patients had received.

At this point it remains uncertain whether a slow drip or a fairly rapid bolus of the drug is the appropriate mode of administration. In light of the generally benign nature of short-term cimetidine use and its apparently rapid efficacy, further study of its usefulness in the treatment of scombrotoxism is warranted.

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REFERENCES