Histamine Poisoning after Ingestion of Spoiled Raw Tuna in a Patient Taking Isoniazid

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An 83-year-old woman taking isoniazid (INH) suddenly developed a headache, palpitations, and skin eruptions with itching while eating raw tuna. The symptoms were compatible with those of histamine intoxication. When given fresh raw tuna to eat, no such reactions were evoked in this patient. The episode was speculated to be due to two conditions; eating spoiled raw tuna and at the same time being on a course of INH, a potent histaminase inhibitor. We should therefore be aware of the possible adverse effects due to the interactions between drugs and foods.

(Key words: fish poisoning, tuberculous patient, histaminase)

Introduction

Isoniazid (INH) is an anti-tuberculous agent, and is known to interfere with the metabolism of some drugs such as carbamazepine, anticoagulants, and benzodiazepines (1). Interactions of INH with certain foods have also been reported (2). We report here a patient taking INH who developed histamine poisoning after ingestion of spoiled raw tuna.

Case Report

An 83-year-old woman with a seven-year history of rheumatoid arthritis was admitted to our hospital on June 12, 1995 for the close examination of a left cervical mass (35 x 35 mm) (Fig. 1). Pathological diagnosis of the biopsied specimen was “tuberculous lymphadenitis”. INH and rifampicin (RFP) were then prescribed from August 2, 1995, and only INH was continued from September 1. The mass became unpalpable by the end of November, and her condition had been stable throughout her hospital stay.

On February 12, 1996, she ate three pieces of raw tuna which had been carelessly left at room temperature during the daytime. While taking supper, she suddenly developed a moderate headache, palpitations, tingling, and skin eruptions with itching throughout her body (Fig. 2). Her temperature rose to 38°C. On the suspicion of some allergic reaction, she was immediately treated with a stronger neo-minophagen C (SMC) (glycyrrhizin, aminoacetic acid, 1-cysteine), an anti-allergic agent. Diarrhea, vomiting, and wheezing were not observed. Laboratory data on the next day revealed an increase in eosinophils (25%) and the serum IgE level (508 U/l). The skin itching and skin eruptions subsided in a couple of days. She continued to take INH, and she was given raw tuna after complete recovery from this episode, but no adverse effect was observed.

Discussion

There are only a few case reports on histamine poisoning after ingestion of fish in tuberculous patients (3-6). Senanayake et al (5) reported one case due to skipjack, and Uragoda (6) reported three cases due to Sardinella sirm and two cases due to tuna fish (Neothunnus macropterus) (7). Similar reactions from smoked mackerel (scombroid fish) have also been observed in persons who were not taking INH (8).

The occurrence of histamine poisoning in this case was speculated to be due to two combined conditions (Fig. 3). The first condition was to eat the spoiled fish. Scombroid fish, including tuna and skipjack, is known to be rich in histidine (around 111 mg/100 g) (8). Histamine is primarily the product of decarboxylation of the amino acid, histidine, the process being mediated by decarboxylating bacteria. During spoilage of fish, these bacteria multiply, and the histamine content increases. We did not undertake a bacterial examination of her raw tuna, but the fact that no reactions were evoked in this patient when she was given fresh raw tuna supports this idea. The second condition was that she had been treated with INH.

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for more than 6 months. Histamine is readily metabolized by histaminase such as monoamine oxidase (MAO) and diamine oxidase (DAO). INH is known to be a potent inhibitor of both MAO and DAO (1), and the enzyme inhibition causes a decrease in histamine detoxication. The fact that these reactions had never occurred in this patient in the past when she was not on INH supports this idea.

It is reported that histamine poisoning occurs more frequently in individuals with allergic inheritance (9, 10). The present patient had no prior history of allergic diseases, but her peripheral eosinophil count was slightly high for unknown reasons. Just after the occurrence of this episode, an increase in the serum IgE level and eosinophils was observed. No reports have stated changes in the serum IgE level and eosinophil count after histamine poisoning in individuals with allergic inheri-
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tance. Regarding this finding, we have no precise clear explanation at the present time. However, the possibility of allergic reactions to the implicated food seems deniable as there was no such prior history in this patient.

In addition to fish, cheese has also been found to interact with INH (11, 12). However, these facts have not been well recognized as yet. Therefore, it is important to be aware of the possible adverse effects due to interactions of drugs with foods.

References