

# NINE FATAL CASES OF PUFFER FISH POISONING IN SABAH, MALAYSIA

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## INTRODUCTION

The puffer fish belongs to the family Tetraodontidae and has one identifying characteristic which is the ability to inflate itself by gulping in large quantities of air or water. They are commonly found in estuarine and inshore water. The viscera (ovaries, testes and liver) of puffer fish contain varying amounts of extremely potent toxins (tetraodontoxin). The most violent form of fish poisoning is produced by ingestion of tetraodontoid or puffer-like fishes and this has been reported.<sup>1,2</sup> The pufftoad, *Tetradon maculatum*, has caused fatal poisoning.<sup>3</sup> Despite the high toxicity of this group of fish, the meat is commonly consumed by some fisherman in Sabah without much morbidity. In Japan, puffer fish, called "fugu" commands the highest prices in food fish and are prepared and sold in special restaurants where specially trained cooks are employed to prepare the "fugu". Nevertheless it is still the

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primary cause of food poisoning in Japan especially among the lower socio-economic classes who fail to take the necessary precautions.

In Sabah, four cases of puffer fish poisoning resulting in one death have been documented.<sup>4</sup> We report herewith another incidence of puffer fish poisoning in which 18 persons from seven families were affected with nine deaths from two families.

## CASE REPORT

The incident occurred in Kampung Simuning, Pulau Tambisan, which is an island about 100 Km off Sandakan, a town on the east coast of Sabah. On 9th April, 1987 species of horse mackerel locally known as "Ikan puteh" and puffer fish locally called "Ikan Buntal" were caught from the sea by one of the victims (N.M.) Z.T. A 24-year female, who was three months pregnant and wife of N.M. was said to have a great liking for puffer fish especially, the roe. She cooked the roe together with the whole puffer fish into "gulai lemak" (curry). However, the horse mackerel was not cooked.

On the same day at 1205 hr, 18 persons ate the lunch which consisted of plain white rice and "Ikan buntal" cooked in curry. After ingestion of the incriminated meal all 18 persons were ill of which 9 persons died within 30 – 60 min. The onset of symptoms occurred within 5 – 15 min (median 10 min) after ingestion of the cooked "Ikan buntal" with roe. Symptoms included vomiting, abdominal cramp and drowsiness. Of the 18 affected cases nine had vomiting, three had vomiting and drowsiness while six had all the three symptoms. In the nine fatal cases, death

from respiratory failure occurred within 30 – 60 min before they could seek medical treatment. The nine deaths were from two families, the first family consisting four children and their parents and the other family consisting of one child and two adults all of whom were related to the first family. The other nine persons were hospitalised. The morbidity and mortality with age and sex groups are shown in Table 1.

TABLE 1  
MORBIDITY AND MORTALITY OF  
PUFFER FISH POISONING WITH  
AGE AND SEX GROUPS

Age Group (years)	Morbidity		Mortality	
	Female	Male	Female	Male
0 – 4	4	1	3	—
5 – 9	2	1	2	—
10 – 14	—	—	—	—
15 – 19	1	3	—	1
20 – 24	2	1	1	1
> 25	2	1	—	1
All ages	11	7	6	3

## DISCUSSION

The left-over food was not available as the remaining portion was disposed off shortly after the group of people were ill. The kitchen utensils had been thoroughly washed prior to the arrival of the health investigation team. About 10g of puffer fish roe was found buried in the ground. As no sample of intact puffer fish was available for species identification and toxicity test, neither the exact species nor the toxicity level could be established. Five species of puffer fish, *Chelonodon patoca* (Hamilton), *Lagocephalus gloveri* (Abe et Tabeta), *L. lunaris* (Blooh et Schneider), *L. scleratus* (Forster) and *Arothron manillensis* (Proce) are commonly found in estuarine and

inshore waters of Sabah (Jeremy Ting, personal comm.) and it was possible that one or more of these species could have been responsible for the acute poisoning and deaths. Very little information is available on the comparative toxicity of these five species in Sabah although some work has been done in peninsular Malaysia on the comparative lethality of tissue extracts from three species of puffer fish.<sup>5</sup>

The severity of the symptoms depends on the amount of toxin consumed. In the past, those victims had eaten the flesh of puffer fish without any signs of poisoning as the viscera had been completely removed before cooking.

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