

# Salmonella Food Poisoning in Benguet

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## ABSTRACT

In July 1992, we investigated a food poisoning outbreak after a wedding banquet in Tuba, Benguet. Food handlers were interviewed and an environmental investigation was conducted. Leftover food was cultured at the Research Institute for Tropical Medicine. Rectal swabs were examined bacteriologically at the Bureau of Research Laboratories. A case-control study was conducted. Cases were previously well individuals who developed at least two of the following symptoms after eating food at the wedding reception: diarrhea, abdominal pain, nausea, or vomiting. Controls were well individuals who shared the same meal. We interviewed 197 guests: 157 cases and 40 controls. Among the dishes served, pork "adobo" had the highest difference in food-specific attack rates. Cases were 11 times more likely to have eaten this dish than controls (95% C. I. 2.33-57.27). "Pansit" was also found to carry a significant risk (OR 2, 95% C. I. 1.04-4.82). *Salmonella enteritidis* was isolated from the "adobo" and from 48% of the rectal swab cultures. This was suggestive of a common-source *S. enteritidis* food poisoning outbreak. The most probable source was animal carriers. Local health officials conducted a health education campaign in the area. Continuing surveillance showed no further food poisoning outbreaks in Tuba. [*Phil J Microbiol Infect Dis* 1993; 22(1):5-7]

*Key words:* Salmonella, food poisoning, epidemiology, prevention

## INTRODUCTION

In July 1992, the Cordillera Regional Health Office sentinel site reported a food poisoning outbreak to the Field Epidemiology Training Program of the Department of Health. The outbreak involved guests at a wedding reception held in Asin, Tuba, Benguet. A team was sent to conduct an epidemiologic investigation.

## MATERIALS AND METHODS

We conducted an unmatched case-control study. Cases were defined as previously well individuals who suddenly developed any two of the following symptoms after eating food at the wedding banquet: diarrhea, abdominal pain, nausea, or vomiting. Controls were well individuals who shared the same meal. Data were analyzed using the chi-square and Kruskal-Wallis tests.

We interviewed some food handlers and inspected the area where the food was cooked and served. Leftover food was sent for culture at the Research Institute for Tropical Medicine. Rectal swabs from cases and foodhandlers were submitted to the Bureau of Research Laboratories for bacteriologic studies.

## RESULTS

We were able to interview 197 of an estimated 300 guests. Of these, 157 were cases and 40 were controls. Fifty-seven percent of the cases and 58% of the controls were men. Ages of the respondents ranged from one to 74 years. The median age was 26 years for cases, and 27 years for controls. No significant differences between cases and controls were found regarding age or gender.

Seventy-five (48%) of the 157 cases sought medical consultation, and 52 (33%) were hospitalized. The incubation period ranged from one to 62 hours with a median of 13, Figure 1.

Common signs and symptoms included diarrhea (92%), abdominal pain (89%), and vomiting (54%). The patients recovered after 5 to 86 hours (median 48). There were no deaths.

We computed food-specific attack rates, Table 1, to obtain proportions of those who got ill among those who ate specific food items, and those who got ill among those who did not eat the food item. Differences in attack rates were then computed. Among the dishes served, pork "adobo" had the highest difference in food-specific attack rates. This suggested that more people who ate "adobo" got ill compared to those who did not eat this dish. Cases were 11 times more likely than controls to have eaten "adobo" (95% C.I. 2.33-57.27). Cases were twice more likely than controls to have eaten the "pansit" (95% C.I. 1.04-4.82). Among the ingredients of the "pansit" was the same pork used in the "adobo" dish. Fried chicken was protective (OR 0.08, 95% C.I. 0-0.9). This was cooked for members of a religious sect who do not eat pork. Gin was protective with an odds ratio of 0.40 (95% C.I. 0.16-0.98). Those who drank alcoholic beverages were probably less likely to have eaten "adobo", which is usually eaten with rice. However, we could not prove this statistically because the sample size was probably too inadequate to show a difference.

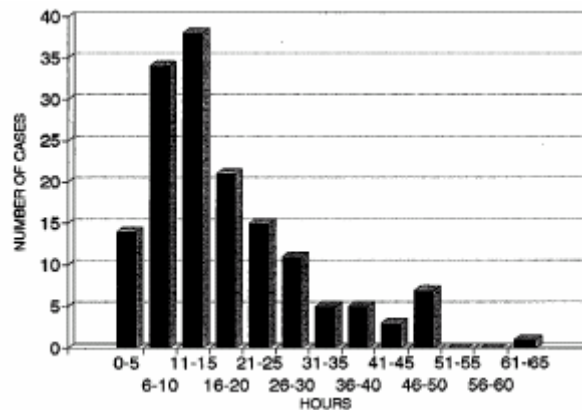


Figure 1. Incubation period, food poisoning cases (N=154\*), Benguet, 1992  
\*154 out of 157 cases responded

Table 1. Food-specific attack rates, food poisoning outbreak (N=197), Tuba, Benguet, July 1992

FOOD ITEM	Those who ate			Did not eat			Difference
	Ill	Well	AR* (%)	Ill	Well	AR* (%)	
Pork "adobo"	154	33	82	3	7	30	52
Rice	146	33	82	11	7	61	21
"Apritada"	9	0	100	148	40	79	21
Beer	5	0	100	152	40	79	21
"Pansit"	105	19	85	52	21	71	14
Pork liver	8	1	89	149	39	79	10
Orange juice	69	12	85	88	28	76	9
Dinuguan	25	4	86	132	36	79	7
"Dinakdakan"	16	3	84	141	37	79	5
Water	46	11	81	111	29	79	2
Soft drinks	50	13	79	107	27	80	- 1
"Buko"salad	42	13	76	115	27	81	- 5
"Soupbones"	30	14	68	127	26	83	- 15
Gin	23	12	66	134	28	83	- 17
Fried chicken	1	3	25	156	37	81	- 56

Salmonella enteritidis group D was isolated from the "adobo" and from 48% (31/64) of the rectal swab cultures. Two cultures found positive for the organism were obtained from

asymptomatic food handlers. During the environmental investigation, we found that the pigs intended for the banquet were butchered approximately 6 hours before cooking started, and the meat was kept unrefrigerated in woven bamboo baskets and other uncovered containers. The food was prepared outside the house in rainy weather about 4 feet away from a pigsty and duck pen. The dishes were stored unrefrigerated for 2-6 hours before serving. There were more than 20 foodhandlers, but all of the dishes were prepared by several individuals. None of the 10 foodhandlers interviewed admitted to having been ill during the preceding month.

## **DISCUSSION**

The epidemic curve and sharing of a common meal by a group indicated that this was a common-source outbreak. The source of contamination was probably animals, and the agent was *Salmonella enteritidis*. In the Philippines, there is limited data on non-typhoidal salmonellosis. This is because the etiologic agents of most diarrhea cases are not confirmed by laboratory methods. Furthermore non-typhoidal salmonella is not a reportable disease.

Salmonellosis in animals is probably widespread in our country. Two percent of apparently healthy pigs have been demonstrated to harbor salmonella.<sup>1</sup> When excreted by pigs, salmonella readily infects other pigs.<sup>2</sup> Rectal swab cultures from domestic animals may be helpful in obtaining prevalence rates of salmonella carriers, but it is not economically possible in our country. The chronic carrier state is more common in animals than humans.<sup>3</sup> It is also possible that any of the asymptomatic food handlers who were found positive for enteritidis were the source of the infection, but they were more likely to have been infected during this outbreak.

In Benguet, as in other parts of the Cordillera, it is traditional for relatives and friends to prepare food for feasts. These people lack formal training on food handling. Thus, local health personnel should direct their health education campaigns at individuals in the community who are habitually called upon by families to prepare food. Diarrheic individuals and identified carriers should be taught not to handle food for as long as they shed the organisms. Laboratory confirmation is needed for this purpose.

Following this outbreak, local health personnel conducted a health education campaign in the area. This focused on food handling practices, environmental sanitation, and food-borne infections. Continuing surveillance showed no further occurrence of food poisoning outbreaks in Tuba.

Documentation of all non-typhoidal salmonella infection regardless of whether they produce clinical signs or occur in carriers is important because all persons or animals discharging salmonella are potential sources of outbreaks.<sup>4</sup> All food poisoning outbreaks should preferably be investigated by health personnel.

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