Third Outbreak

A third outbreak of food-poisoning occurred among a group of 80 probationer nurses who on September 14 consumed a lunch between 12 noon and 1.15 p.m. consisting of braised mutton, gravy, creamed potatoes, boiled dried peas, and sponge pudding with custard. Between 1 and 5 a.m. the next day 20 of them were seized with diarrhoea, colic, vomiting, and dizziness, and a further 40 had mild abdominal pain with no other symptom.

The whole of the food had been prepared by five people on the morning of consumption and it was found that the only items which all the victims had eaten were the meat and gravy and the peas.

When the investigation was made the man who prepared the meat and gravy was not at work; it was later found that he had septic fingers. Apparently he had sustained a small burn on a finger a month previously. This had healed but still remained somewhat inflamed. In addition, two days before the food-poisoning outbreak he had again burned his fingers, and septic blisters had developed, which resulted in his absence from work. A fairly heavy growth of *Staph. aureus*, coagulase-positive, was isolated from each hand.

Unfortunately none of the suspected food remained for examination, and it is unlikely in any case that many organisms would have been found in it as it was eaten hot almost immediately after cooking. The stool specimens from the affected nurses were also negative.

Fourth Outbreak

The fourth outbreak of food-poisoning followed an evening dinner at a café on October 15. The menu comprised soup, roast chicken, stuffing and bread sauce, potatoes, cauliflower, carrots, apple tart with synthetic cream, and coffee. There were 55 diners, of whom 37 were taken ill during the early hours of the following morning, the symptoms being diarrhoea and vomiting. Owing to a delay of almost three days in the notification of this outbreak, nearly a week elapsed before faeces specimens could be obtained from all those persons affected. No *Staph. aureus* or pathogens of the coli-typhoid-dysentery group were isolated from any of the 35 specimens submitted.

None of the food suspected could be obtained, but it was ascertained by interviewing all the diners that only the soup and chicken had been eaten in common by all the victims. The soup had been made entirely from a powder immediately before the meal. A sample of this powder gave a satisfactory bacteriological result.

The chickens were all prepared by one woman who received, cleaned, cooked, and sliced them on the afternoon before the meal. The slices were distributed on plates and remained in a hot chamber for two hours until they were served at about 7.45 p.m. The woman who prepared the chickens was constantly sustaining cuts and scratches from the chicken bones. All swabs of her hands and nostrils taken five days after the dinner gave a fairly heavy growth of *Staph. aureus*, and when one of us examined her nine days after the dinner she was found to have a deep septic puncture wound in the web between two fingers. This she had had for 10 days.

Conclusions

Four outbreaks of food-poisoning in Sheffield during 1949 were associated with *Staph. aureus* infection of the hands of the food preparer. In one outbreak we traced the organism through the food and through the victims. In another we traced the organism to the food, but in the last

two outbreaks the specimens required for bacteriological proof of the cause were not available. *Staph. aureus* strains are very common in the nose and septic lesions of people who have never given rise to food-poisoning, and indeed they are not very uncommonly found in the faeces of normal persons. For this reason cultures for phage typing should be made from separate staphylococcal colonies, and more than one colony from each specimen should be examined. From our own cases staphylococci of phage types other than the one incriminated were also obtained. Before concluding that an outbreak of food-poisoning is due to *Staph. aureus*, a strain of a type generally associated with food-poisoning should have been isolated from a number of victims or from one or more victims and food. This evidence was forthcoming only in the first two outbreaks here described.

It is evident that the immediate notification of an outbreak, together with speedy investigation, in which attention is paid to the hands which prepared the food, is important for successful elucidation.

Summary

Four outbreaks of food-poisoning are described, all associated with *Staph. aureus* infection of the hands of the food preparers.

Our thanks are due to Dr. R. E. O. Williams and Miss J. E. Rippon, of the Central Public Health Laboratory, who phage typed the staphylococcal cultures and from whom we obtained most valuable advice. We thank also the sanitary inspectors of the Sheffield Public Health Department for their team-work in obtaining information and specimens for examination.

THROMBOCYTOPENIC PURPURA DUE TO QUINIDINE

BY

G. MOODIE, M.B., B.S.

Although there is a recognized association between quinine and purpura (Wintrobe, 1946), it is very rare for a haemorrhagic state to result from quinidine therapy. In fact, so far as can be ascertained, this is the first case to be reported in England, though five cases have been published in foreign journals.

Case Report

A married woman aged 48 was admitted to hospital on December 28, 1949, in early congestive failure following the onset of auricular fibrillation. She was found to have mitral stenosis, and gave a history of paroxysms of regular tachycardia and paroxysms of auricular fibrillation. There was no past or family history of allergic diseases or of any haemorrhagic diathesis. She asserted that she had not previously received quinidine, and this was checked with other hospitals that she had attended. The auricular fibrillation was confirmed by electrocardiograms and the patient rapidly responded to "digoxin."

Quinidine sulphate, 3 gr. (0.2 g.), was given on December 30 and 31 and regular sinus rhythm resulted. Ten days later (see Chart) a daily maintenance dose of 3 gr. of quinidine sulphate was started after three attacks of paroxysmal regular tachycardia. A slight epistaxis began on January 12, 1950, before the third dose was given, and continued all day. In the evening the patient had a slight vaginal haemorrhage and developed purpura; quinidine was then discontinued, after 9 gr. (0.6 g.) had been given. At first numerous petechiae were present on the legs and the mucous membranes of the lips and gums, with isolated ones on the face, trunk, upper arms, and thighs. During the next twelve hours the rash became more profuse and several ecchymoses developed.

On January 13 a blood smear showed: platelets greatly reduced (fewer than 20,000 per c.mm.); white cells, 5,100 per

Chart showing the amount of quinidine sulphate given and the time relation between its administration and purpura.

c.mm. (neutrophils 56%, eosinophils 6% (360 per c.mm.), lymphocytes 22%, monocytes 16%). On January 16 the bleeding and clotting times were normal. On January 19 a blood smear showed platelets present in normal numbers; white cells, 7,100.

After nine days' rest quinidine, 3 gr. (0.2 g.) daily, was again started. After the second dose the patient complained of a headache, but this was possibly related to a commencing

1947; Burstein and Lamberg, 1948; Nudelman, Leff, and Howe, 1948; and Larimer, 1949).

It is interesting to compare the findings in the six case reports available. They show several points of similarity; these are summarized in the Table. There are several facts which support the view of Brock (1941) and Soisalo (1947) that this is an allergic type of reaction. In all but one case quinidine is known to have been given over a long enough period for allergy to have developed. In the present case it is interesting to notice that the time relation between the first two courses of quinidine was highly suitable for the development of hypersensitivity. The very small doses required to cause purpura and the eosinophilia in two cases (see Table) also favour the idea of an allergic basis. There is other suggestive evidence, in that a very rapid fall in platelets occurred, and this was usually followed by a rapid remission.

Although it is known that purpura and thrombocytopenia can occur independently of one another (MacKay, 1931), in

Summary of Six Cases of Purpura Due to Quinidine Sulphate

	No. of Times Purpura Occurred	Quantity of Quinidine Sulphate Given Before Purpura	Smallest Dose of Quinidine Sulphate Evoking Thrombocytopenia	Degree of Thrombocytopenia in Each Episode	Platelet Count		Eosinophilia
					Rate of Fall	Rate of Rise	
Brock (1941)	2	252-315 gr. (16-20.5 g.) 8-6 months before, also 252 gr. (16.4 g.) in previous 14 days	6 gr. (0.4 g.)	23,000 and 24,000/c.mm.	345,000 to 24,000/c.mm. in 6 hours	24,000 to 105,000/c.mm. in 6 hours	—
Burstein and Lamberg (1948)	1 (also thrombocytopenia once without purpura)	66 gr. (4.3 g.) in previous 10 days	15 gr. (1 g.) (i.e., 5 gr. (0.3 g.) 3-hourly for 3 doses)	1,200 and 9,360/c.mm.	Normal to 42,000/c.mm. in 12 hours from start of 3 x 3-hourly quinidine	1,200 to 130,680/c.mm. in 1 day; 9,360 to 65,940/c.mm. in 6 days	—
Larimer (1949)	2	3 gr. (0.2 g.) 3-hourly for previous 4 days	½ gr. (16 mg.)	2 occasions zero	240,000 to 5,000/c.mm. in 4 hours	5,000 to 170,000/c.mm. in 1 day; Zero to 140,000/c.mm. in 4 days	—
Nudelman, Leff, and Howe (1948)	2	9 gr. (0.6 g.) a day for previous 10 days	1½ gr. (0.1 g.)	4,000/c.mm. and zero	Normal to 17,000/c.mm. in 1 hour	4,000 to 152,000/c.mm. in 7 days; Zero to normal in 7 days	—
Soisalo (1947)	1	60 gr. (3.9 g.) 12-6 months before; also 135 gr. (8.8 g.) in previous 28 days	135 gr. (8.8 g.) in previous 1 month	22,000/c.mm.	Not known	22,000 to 94,000/c.mm. in 2 days	480/c.mm.
Present case	3	3 gr. (0.2 g.) a day for 2 days 10 days before	½ gr. (30 mg.) (1 gr. (65 mg.) in previous 4 days)	2 occasions fewer than 20,000/c.mm.	" "	Less than 20,000 to 135,000/c.mm. in 17 hours	360 and 552/c.mm.

menstrual period. On January 24 the fourth dose was given in the morning, and that evening the patient developed purpura in a similar distribution.

At 10 a.m. on January 25 Hess's test was normal; a blood smear showed: platelets greatly reduced (fewer than 20,000 per c.mm.); white cells, 4,600 per c.mm. (neutrophils, 60%, eosinophils 12% (552 per c.mm.), lymphocytes 27%, monocytes 1%). No fresh purpura developed, and next day Hess's test was again normal, the platelet count at 3 p.m. was 135,000 per c.mm., but blood taken at this time showed no retraction after 18 hours.

An attempt at desensitization was started on February 1. Quinidine was given in the following very small daily doses—1/12 gr. (5.4 mg.), 1/6 gr. (11 mg.), ½ gr. (16 mg.), ½ gr. (32 mg.)—but two to three hours after the ½-gr. dose (total 1 gr. (65 mg.) in four days) the patient again developed purpura. This was quite as severe as in the previous episodes, but four days later a blood smear showed platelets present in normal numbers.

Discussion

The time relation between the appearance of purpura and the administration of quinidine sulphate leaves no doubt that the purpura can be attributed to the drug. Brock (1941) published a similar case of thrombocytopenic purpura following quinidine sulphate and also mentioned an oral report of a case observed by Seyderhelm in 1927. Subsequently four other cases have been reported (Soisalo,

the cases under discussion marked thrombocytopenia was a constant finding and, when looked for, preceded the appearance of purpura. Thus it seems that a fall in platelets is at least a factor in the production of purpura in these cases, and it is possible that they must fall below a critical level before it occurs. In one case (see Table) thrombocytopenia occurred once without any purpura, which makes it unlikely that the fall in platelets is due to an increased rate of removal to repair capillary damage. Ackroyd (1949) has made an interesting study of "sedormid" purpura, and has produced experimental evidence of both allergic capillary injury and a platelet deficiency. The general features of purpura due to sedormid and that due to quinidine are very similar, and it seems probable that they have a similar pathogenesis.

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