the biochemical results, and to several surgeons and anaesthetists for permission to report cases under their care.

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Milk-borne Outbreak of Salmonella Heidelberg

R. IRENE HUTCHINSON,* M.D., D.P.H., D.T.M.

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On 24 June 1963 a patient aged 21, living in Southampton, was admitted in labour to the General Hospital Maternity Unit. Soon after admission she passed a "rather loose" stool which was found to contain *Salmonella heidelberg*. On the same day faeces were received from a child aged 1½ years who lived in a New Forest village and had diarrhoea. *Salm. montevideo* was isolated. The child's father was found to be excreting *Salm. montevideo*. He was symptomless but had had diarrhoea two weeks previously. Also on 24 June a local veterinary surgeon brought in a culture of organisms for identification. They were isolated from a cow which was one of a number with acute enteritis in a herd from which the milk was being sold to the public as tuberculin-tested raw milk. The milk was being put into a number of vending machines in both the new Forest and the Southampton districts. The culture was found to be *Salm. heidelberg*.

A sample of milk taken from each of the vending machines showed that 11 contained *Salm. heidelberg*—three in the New Forest and eight in Southampton.

Investigation

Inquiries made of the mother from the maternity unit revealed that she did occasionally have a "milk drink" from a machine "near her shopping centre." This was one from which a positive milk had been found.

Faeces from workers and their families at the farm were examined (eight males and three females). Five of the 11 were excreting *Salm. heidelberg*, and among the latter were the head cowman, the poultryman, and the assistant vending-machine operator. On 3 July faeces from 10 cows with enteritis were received and all contained *Salm. heidelberg*. On 5 July a sample of feeding material as given to the cows was examined. It consisted of barley and appeared to be contaminated with rat faeces, and *Salm. heidelberg* was isolated.

On 24 July, and after veterinary treatment had been given to the affected cows, faeces from all the herd were examined. Sixty-six were free of salmonellae, but 11 yielded *Salm. heidelberg* and two specimens yielded *Salm. montevideo*.

On finding this second type of salmonella inquiries were made of the family from whom *Salm. montevideo* had been isolated on 24 June. The father stated that he had bought a milk drink from one of the vending machines but only he had consumed any. His diarrhoea had started about four days

later. The child had never had any but heat-treated milk. As the father was still excreting the organism at the time of the child's illness it would seem that the latter must have been infected from the father. Further inquiries about the cows showed that in 1961 there had been a small outbreak of enteritis among some calves and that the causal organism was then *Salm. montevideo*.

Although the sale of the raw milk had been immediately stopped, specimens from a number of cases of enteritis from which *Salm. heidelberg* was isolated occurred during the next week or two.

The accompanying Table shows the age and sex distribution of excretors and mode of infection. Four children (aged 6 months, 8 years, 8 years, and 15 years) were ill enough to be

Sex and Age Distribution and Mode of Infection of *Salm. Heidelberg* Excretors (Exclusive of Persons and Their Families at the Affected Farm)

Years :	<1	1	2	5	14-21	>21	Total
Isolation of salmonellae ..	3	1	7	12	2	3	28
No. of males ..	1	1	4	7	2	2	17
No. of females ..	2	0	3	5	0	1	11
No. having drunk milk from vending machines ..	1	0	3	11	2	3	20
No. infected from family contact with an excretor ..	2	0	2	0	-	-	4
No. excreting salmonellae with no obvious mode of infection	-	1	2	1	-	-	4

Salm. montevideo excretors 2—father and son (aged 15 months).
Origin of infection : Father drank milk from vending machine—developed diarrhoea. Son had no milk from vending machine—developed diarrhoea about two weeks later.
Source of infection : Probably contact with father. (Father was a symptomless excretor.)

admitted to hospital. Symptoms included pyrexia, abdominal pain, diarrhoea, and vomiting, all of varying degrees of severity. The incubation period averaged four days in most of the patients.

It will be seen that from all sources (farm 5, district 28) there were 33 human excretors of *Salm. heidelberg* and two of *Salm. montevideo*. Excluding the workers at the farm, who could be considered to be in close contact with the affected herd, there were 28 excretors of *Salm. heidelberg*, and 20 of these had drunk milk from one or other of the vending machines a few days before the onset of their illness. Four excretors had never had any of the milk, but there was at least one other excretor of the organism in the house, so that a family cross-infection was probable. It was impossible to decide the source of infection of four persons as no one else in the family was infected and no history of having drunk any milk from the machines was obtained.

* Director, Public Health Laboratory, Southampton ; Consultant Bacteriologist, Southampton Group Hospitals.

Comment

This episode suggests that only heat-treated milk should be on sale in milk-vending machines. Indeed, it emphasizes once more the need for pasteurization or other adequate heat-treatment of all milk. It also suggests that outbreaks of diarrhoea in

cows producing milk which is sold to the public as not heat-treated should be notified immediately to the local medical officer of health. Immediate co-operation between veterinary surgeon, medical officer of health, and public health laboratory, with a resulting quick diagnosis and efficient follow-up, is essential.

Medical Memoranda

Fibrosarcoma of the Heart Diagnosed During Life

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The presence of primary sarcoma of the heart is commonly discovered only at necropsy on patients who have died of unexplained sudden death, progressive heart failure, or metastatic neoplastic disease of uncertain origin (Coulter and Gildenhorn, 1961; Depierre *et al.*, 1961; Cayley and Bijapur, 1963).

In the eight recorded cases in which diagnosis had been made during life, three (Zemansky, 1928; Shelburne, 1935; Lübschitz *et al.*, 1949) presented with pericardial effusion. The others gave rise to increasing (Popp, 1932) or deformed (Beck and Thatcher, 1925) cardiac silhouette on x-ray examination, to metastases (Barnes *et al.*, 1934), or to mitral-valve obstruction (Ravid and Sachs, 1943; Abbott *et al.*, 1962). Retrospective pathological studies on primary malignant disease of the heart have shown that 25 out of 100 (Whorton, 1949) and 10 out of 30 (Porter *et al.*, 1961) had pericardial effusion. It is evident that there is a better chance of making the diagnosis during life in those who present in this way.

We report here a case of fibrosarcoma of the left atrium, in which the diagnosis was made six months before death in the course of the treatment and investigation of cardiac tamponade.

CASE REPORT

A 54-year-old housewife was admitted to hospital on 4 October 1962 with a history of two attacks of severe retrosternal pain—the first, three weeks previously, lasting one and a half hours, and the second, the day before admission, lasting all day. Her weight had been steady.

There was a regular tachycardia of 120 but no other abnormal signs. Her B.P. was 120/90 and there was no cardiac failure. E.S.R. was 42 mm./1 hour (Westergren). E.C.G. showed isoelectric T waves in leads III and aVf suggestive of resolving posterior myocardial infarction. Chest x-ray examination showed an enlarged cardiac silhouette.

She was treated with bed rest and phenindione. Her temperature, 100° F. (37.8° C.) on admission, settled in a week, as did her tachycardia. On 21 October there was a recurrence of retrosternal pain and fever and the jugular venous pressure (J.V.P.) was raised 2–3 cm. for 24 hours. Chest x-ray examination showed further increase in the size of the heart shadow.

On 7 November she became acutely ill with vomiting and shock. Pulse 120, thin, and paradoxical; B.P. 70/50; J.V.P. raised by 15 cm. and increased by inspiration. Her cardiac tamponade was treated by aspiration of 600 ml. of heavily blood-stained fluid from the pericardial sac; the fluid was sticky and difficult to remove and both xiphisternal and apical routes were used. She improved rapidly and

her B.P. recovered to 140/90. Two further aspirations were required in the next two days for recurrent tamponade; 100 ml. of air was introduced and x-ray film (see Fig.) showed normal heart size and a mass high up on the left border of the heart within the pericardium. E.C.G. showed flat T waves in all limb leads.

Anticoagulants were stopped. No L.E. cells were found in the blood, and electrophoretic analysis of plasma proteins was normal. Though no malignant cells were seen in the pericardial fluid, a more persistent search in blood-stained fluid aspirated from the left pleural cavity, which presumably had drained through the apical aspiration puncture of the pericardial sac, showed cells "highly suggestive of adenocarcinoma" (Dr. F. R. Philips). Tubercle bacilli were not found in either fluid. Bronchoscopy was normal.

Thoracotomy was performed on 11 December by Miss Doreen Nightingale. Two large masses of tumour, apparently arising from the posterior border of the left atrium, were found within the pericardial cavity. Biopsy showed a spindle-celled fibrosarcoma.

No attempt was made to remove the tumour, but the pericardium was left unsutured to avoid further tamponade. Radiotherapy was given and she was free of symptoms for two months. She was readmitted in April 1963 on account of superior vena caval obstruction. X-ray examination showed a large superior mediastinal mass, which continued to increase in size despite more radiotherapy. She died on 8 May.

Necropsy showed the heart completely encased in yellowish-white growth infiltrating into the myocardium. It was adherent to the sternum anteriorly and constricted the superior and inferior venae cavae. A thick mass surrounded the aorta in the superior mediastinum and had compressed and deviated the trachea and ulcerated into the oesophagus. There was involvement of both lungs with bilateral pleural effusions.

Antero-posterior x-ray film of chest after introduction of air into pericardial sac.