SHORT PAPER

A listeriosis patient infected with two different *Listeria monocytogenes* strains

W. THAM*, J. ALDÉN2, H. ERICSSON1, S. HELMERSSON1, B. MALMODIN2, O. NYBERG4, A. PETTERSSON1, H. UNNERSTAD1 AND M.-L. DANIELSSON-THAM1

1 Department of Food Hygiene, Uppsala, Sweden
2 Communicable Disease Control Unit, Falun, Sweden
3 Department of Clinical Medicine, County Hospital Falun, Falun, Sweden
4 Department of Clinical Microbiology, County Hospital Falun, Falun, Sweden

(Accepted 3 October 2001)

SUMMARY

Normally, only one isolate of *Listeria monocytogenes* from a case of listeriosis is subjected to characterization. Here we show that two isolates from different sites of the body were not the same strain. Such a phenomenon may not have any clinical relevance, although it may confuse the epidemiologist trying to match infection source with infection target.

A 56-year-old man was admitted to a psychiatric clinic for treatment of alcoholism known for the last 25 years. He had also an insulin dependent diabetes mellitus. During the previous month, mainly alcohol, but no food, had been consumed. Examination showed raised concentrations of bilirubin (201 µmol/l), C-reactive protein (CRP, 161 mg/l), aspartate- (ASAT, 4-47 µkat/l) and alaninaminotransferase (ALAT, 1-48 µkat/l), but low prothrombin complex (PK, 21–42%). Leucocyte count was 4-1-10*<sub>9</sub>/l and erythrocyte sedimentation rate (ESR) 92 mm/h. Blood samples did not show any bacterial growth and samples from urine and throat were without significant bacterial growth.

The patient was referred to a medical clinic. The diagnosis was acute alcoholic hepatitis. Treatment was started with lactulose, phytomenadionum, spironolactone, dixyrazine, metronidazolum and ciprofloxacin. After 19 days he suffered a sudden onset of fever (39–5 °C), general malaise and shivering and was treated with intravenous cefuroxime. Bacterial samples from that day showed *Listeria monocytogenes* in the blood, *Enterococcus faecalis* in the urine, and a normal throat flora. The patient died the next day and autopsy was performed 5 days later. Macroscopic examination revealed generally sclerotic arteries and a cirrhotic liver. The purulent meninges were sampled by swab which was subsequently dipped in sterile thioglycolate broth and streaked onto anaerobic agar, chocolate agar, C.L.E.D. agar and blood agar with methyl violet (1–5 mg/l). This sample yielded large numbers of *L. monocytogenes*, sparse numbers of alpha haemolytic streptococcus and a few enterococcus. The two latter genera were considered to be normal contaminants in this kind of sample.

One isolate of *L. monocytogenes* from the blood culture and one isolate of *L. monocytogenes* from the meninges were serotyped and phage typed according to reference methods [1, 2]. Both isolates belonged to serovar 4b, but to different phagovars. The meningeal isolate (SLU 3176) belonged to phagovar 2389:3552:2425:1444:3274:2671:52:107:108:340 and the blood isolate (SLU 3177) belonged to phagovar 2389:2425:3274:2671:47:108:340. The antibiogram pattern was identical, i.e., both isolates were sensitive to ampicillin, meropenem, erythromycin, trimethoprim-
Fig. 1. REA profiles of L. monocytogenes produced by cleavage of DNA with AscI. Lanes 1 and 4: Lambda Ladder PFG Marker NO340S (BioLabs). Lane 2: meningeal isolate SLU 3176. Lane 3: blood isolate SLU 3177.

Listeriosis is a food-associated disease. Outbreaks have been due to consumption of, e.g. vegetables, soft cheese, meat products, and vacuum-packed cold-smoked and gravad fish [4]. A food item sometimes harbours more than one strain of L. monocytogenes. Thus, we have found five different strains in a gravad rainbow trout and four in a cheese sample [5, 6]. However, the findings of more than one strain of L. monocytogenes in normally sterile sites of a human listeriosis patient have not, to our knowledge, been reported before. Although, two different strains in a patient may not have any obvious clinical relevance this phenomenon constitutes an interpretation problem when investigating sources and routes of listeria infection.

ACKNOWLEDGEMENTS

We are grateful to Professor J. Bille and Dr E. Bannerman at the Centre National des Listeria in Lausanne, Switzerland for serotyping and Dr J. Rocourt and Dr Chr. Jacques at the Institut Pasteur in Paris, France for phage typing the Listeria monocytogenes strains.

REFERENCES