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NATIONAL SURVEILLANCE OF COMMUNICABLE DISEASES

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SHIGELLOSIS OUTBREAK FROM IMPORTED BABY CORN

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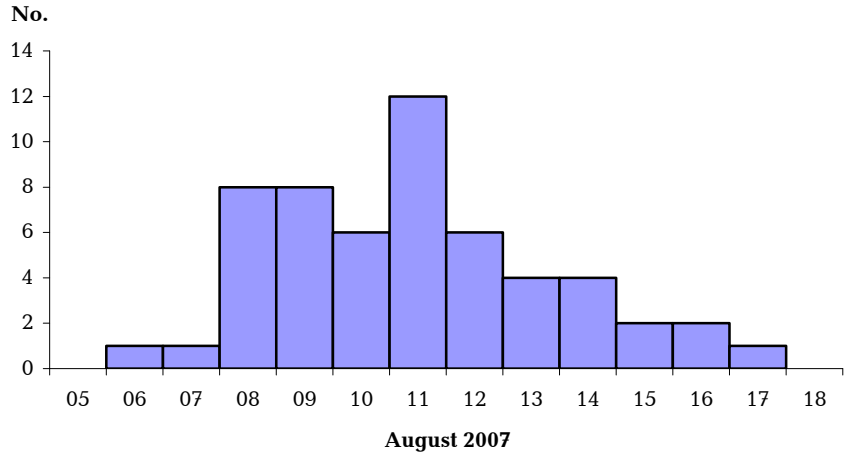
On 16 August 2007, the Food Inspectorate Region East and the SSI became aware of an apparently food-borne shigellosis outbreak caused by Shigella sonnei.

Suspicion was aroused by the notification of two shigellosis cases among the employees of two different companies. Both had ingested raw exotic vegetables at their workplace canteen. In both cases, the vegetables had been supplied by the same caterer on 6-7 August. Both companies were contacted and both reported further cases of serious gastrointestinal disease.

Patient interviews indicated that the most probable sources of infection were imported baby corn and sugar peas. The vegetables had been delivered to caterers, restaurants and shops throughout Denmark, and a nationwide outbreak was thus a potential risk. Such assessment was supported by the SSI's registration of recent shigellosis cases in persons who, when interviewed, stated that they had ingested baby corn and sugar peas from other suppliers.

Due to the strong suspicion about these food vehicles, the Danish Veterinary and Food Administration on 17 August initiated the withdrawal of baby corn and sugar peas. Concurrently, the SSI and the Veterinary and Food Administration implemented surveys to establish the scope of the outbreak and identify the infection source.

Figure 1. Shigellosis cases by date of disease onset, 6-17 August 2007 (n=55)



Extent of the outbreak

At present, a total of 122 shigellosis cases have been notified in the period 6-24 August. For comparison, a total of 46 cases were notified in all of 2006.

In all, 119 cases are possibly associated with the outbreak, as no information of travels abroad < 3 days prior to disease onset or other exposures which may explain the infection was provided.

The majority (80%) of the cases possibly associated with the outbreak occurred in Zealand, but cases were also reported from Funen and Jutland.

The median age was 38 years (range 1 to 92 years), and 89 (75%) were females.

On the basis of 55 case interviews, the symptom onset date ranged from 6 to 17 August, Figure 1. A total of 49% presented with bloody diarrhoea, while 91% reported abdominal convulsions and 25% had been admitted to hospital.

Infection source identification

To identify the source of infection, a retrospective cohort survey was conducted at one of the larger companies from which disease cases had been reported. Data was gathered electronically using a web based questionnaire. Analyses based on 103 respondents identified 24 presumed cases and demonstrated an increased risk of illness in persons who had been eating at the canteen on 6, 7, or 8 August.

The relative risk of illness among persons who had eaten baby corn at the canteen was 4.6 (95% CI: 2.0-11) for 6 August and 4.0 (95% CI: 1.7-9.6) for 7 august. Among the employees who had ingested baby corn on 6 or 7 August, 65% and 72% respectively, had gastrointestinal illness.

The cohort survey thus identified baby corn as the most likely source of infection. This finding was supported by interviews with the notified patients identifying baby corn as the most frequently occurring food exposure.

Microbiological testing of the suspect consignments of imported baby corn demonstrated a high occurrence of E. coli indicating faecal contamination. Testing for specific types of bacteria is still ongoing.

Resistance

Resistance testing of a number of isolates has shown that the outbreak strain is resistant to ampicillin, sulfonamides, cephalothin and streptomycin, but susceptible to chloramphenicol, nalidixic acid, ciprofloxacin, mecillinam and gentamicine. Further typing tests will determine if the outbreak comprises more than one strain.

Commentary

It is thought that the rapid response, including recognition of the outbreak, tracing the source of infection as well as withdrawal of the suspect products has prevented further cases of illness. Shigella sonnei is infectious at low doses of bacteria and secondary cases may occur.

Shigella infections are primarily acquired in connection with travel abroad to endemic areas, EPI-NEWS 42-43/04. However, Shigella infection may also occur as a food-borne infection in Denmark, often associated with ingestion of raw exotic vegetables produced under poor hygienic conditions.

Shigellosis is not a zoonosis and consequently food-borne infection is the result of human faecal contamination of the food. The most recent major Shigella outbreak in Denmark occurred in 1998 and was also caused by imported baby corn, EPI-NEWS 25-33/98.

The guidelines for employees of the food industry and retail business as well as for the employees and children of childcare institutions are that two negative cultures should be obtained before resuming work responsibilities or returning to the institution. However, the decision in each case depends on the judgement of the local Medical Officer of Health, EPI-NEWS 10/01 and 50/03.

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Individually notifiable diseases

Number of notifications received in the Department of Epidemiology, SSI (2007 figures are preliminary)

Table 1	Week 34 2007	Cum. 2007 [1]	Cum. 2006 [1]
AIDS	0	36	30
Anthrax	0	0	0
Botulism	0	0	0
Cholera	0	0	0
Creutzfeldt-Jakob	0	6	14
Diphtheria	0	0	0
Food-borne diseases	12	369	342
of these, infected abroad	4	69	82
Gonorrhoea	2	239	288
Haemorrhagic fever	0	0	0
Hepatitis A	0	17	16
of these, infected abroad	0	6	5
Hepatitis B (acute)	1	17	13
Hepatitis B (chronic)	2	182	232
Hepatitis C (acute)	0	4	6
Hepatitis C (chronic)	2	245	360
HIV	0	192	143
Legionella pneumonia	1	66	72
of these, infected abroad	0	14	19
Leprosy	0	0	0
Leptospirosis	0	7	7
Measles	0	1	26
Meningococcal disease	0	48	57
of these, group B	0	27	28
of these, group C	0	15	11
of these, unspec. + other	0	6	18
Mumps	0	3	11
Neuroborreliosis	2	52	27
Ornithosis	0	7	8
Pertussis (children < 2 years)	0	47	34
Plague	0	0	0
Polio	0	0	0
Purulent meningitis			
Haemophilus influenzae	0	2	1
Listeria monocytogenes	0	7	7
Streptococcus pneumoniae	1	80	63
Other aethiology	0	10	5
Unknown aethiology	0	9	16
Under registration	2	12	-
Rabies	0	0	0
Rubella (congenital)	0	0	0
Rubella (during pregnancy)	0	0	0
Shigellosis	21	59	38
of these, infected abroad	1	23	33
Syphilis	1	65	47
Tetanus	0	0	2
Tuberculosis	11	274	252
Typhoid/paratyphoid fever	0	12	19
of these, infected abroad	0	11	19
Typhus exanthematicus	0	2	0
VTEC/HUS	2	103	93
of these, infected abroad	1	29	32

[1] *Cumulative number 2007 and in corresponding period 2006*

Selected laboratory diagnosed infections

Number of specimens, isolates, and/or notifications received in SSI laboratories

Table 2	Week 34 2007	Cum. 2007 [2]	Cum. 2006 [2]
Bordetella pertussis (all ages)	10	126	136
Gonococci	6	247	286
of these, females	0	37	52
of these, males	6	210	234
Listeria monocytogenes	1	34	32
Mycoplasma pneumoniae			
Resp. specimens [3]	2	258	275
Serum specimens [4]	4	307	247
Streptococci [5]			
Group A streptococci	2	84	109
Group B streptococci	4	66	65
Group C streptococci	0	16	15
Group G streptococci	3	84	99
S. pneumoniae	8	718	696

Table 3	Week 32 2007	Cum. 2007 [2]	Cum. 2006 [2]
MRSA	10	364	-
Pathogenic int. bacteria [6]			
Campylobacter	126	2220	1726
S. Enteritidis	27	306	321
S. Typhimurium	10	193	224
Other zoon. salmonella	12	426	367
Yersinia enterocolitica	5	168	111
Verocytotoxin-producing E. coli	3	105	89
Enteropathogenic E. coli	7	108	146
Enterotoxigenic E. coli	8	137	150

[2] *Cumulative number 2007 and in corresponding period 2006*

[3] *Resp. specimens with positive PCR*

[4] *Serum specimens with pos. complement fixation test*

[5] *Isolated in blood or spinal fluid*

[6] *See also www.germ.dk*

Commentary, Table 1: Measles

The confirmed case of measles was reported in a previously unvaccinated adult on holiday in Switzerland, which has been affected by measles outbreaks during whole 2007. Please refer to www.euvac.net for further information. (Department of Epidemiology)

29 August 2007