

Rapid communications

SHIGELLA SONNEI INFECTIONS IN NORWAY ASSOCIATED WITH SUGAR PEAS, MAY – JUNE 2009

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In May 2009, the Norwegian Institute of Public Health (NIPH) identified a possible outbreak of *Shigella sonnei* infection involving four cases. Additionally, five suspected cases in two separate households were reported. Inspectors from the Norwegian Food Safety Authority (NFSA) visited the two households and found an unopened package of sugar peas imported from Kenya in one of the households. One sample from the sugar peas was positive for *Shigella sonnei* by two PCR methods. Based on this result and information from patient interviews, the NFSA prohibited all sales of sugar peas imported from Kenya.

Introduction

In Norway, shigellosis is a mandatorily notifiable disease, and all isolates are submitted to the NIPH for verification and typing. Around 150 cases of shigellosis are confirmed per year, the majority caused by *Shigella sonnei*. Only around 10 to 20 of the shigellosis cases reported each year are acquired in Norway, usually as secondary cases caused by faecal-oral transmission in households.

On 27 May 2009, the National Reference Laboratory at the NIPH alerted about a suspected outbreak involving four cases of *Shigella sonnei* infection. The infected persons were living in two different counties in Norway, and they had no foreign travel history during the week before onset of illness. On the same day, a municipal medical doctor reported to the NIPH five suspected cases of shigellosis in two separate households.

Methods

Epidemiological investigation

An outbreak investigation was initiated on 27 May by interviewing the four confirmed cases using a trawling questionnaire. On the same day the NFSA inspectors visited the two households where suspected cases were reported and found an unopened package of sugar peas imported from Kenya in one household, and the packing of the same brand of sugar peas in the other. The sugar peas were bought in the same shop. Based on this suspicion, it was decided to focus the interviews on consumption of fresh vegetables and lettuce.

Microbiological investigation

All suspected human *Shigella* isolates received at NIPH are routinely verified, speciated and typed with multilocus variable-number tandem-repeat analysis (MLVA) using a protocol developed by BA Lindstedt et al. (manuscript in preparation). Isolates of

Shigella sonnei showing a distinct MLVA-profile were defined as the outbreak strain. Food samples were analysed at the National Veterinary Institute first by using NMKL no. 174 (*Shigella* spp. PCR method for detection in food), followed by immuno-magnetic separation (IMS) and plating on selective agar. Positive PCR results were confirmed by using a modified version of an octaplex PCR developed for identification of human diarrheagenic *Escherichia coli* and *Shigella* spp. [1]. Any isolates obtained from food samples would be MLVA-typed at NIPH to compare with the patient isolates.

Results

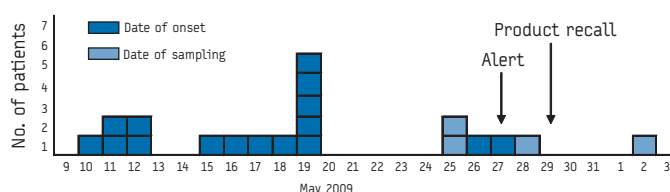
By 16 June, the reference laboratory has registered a total of 20 cases with the outbreak strain of *Shigella sonnei*, who had not travelled abroad prior to illness onset. The cases live in different municipalities, but mainly in the central and western parts of Norway. The date of onset for the first case was 10 May (Figure). All cases were adults except for one teenager, and 16 of them were women. All 20 cases reported to have eaten sugar peas, and there were no other obvious common exposures identified. The majority of the patients had bought the sugar peas in one of the large supermarket chains and only a few in another chain. The NFSA traced the suspected food product and found that all the implicated sugar peas were produced in Kenya. One sample from the unopened package of sugar peas collected in a patient household was positive for *Shigella sonnei* by both PCR methods, but could not be culture-confirmed.

International alerts

On 27 May the NIPH sent an urgent inquiry through the European Food and Waterborne Diseases Network at the European Centre for Disease Prevention and Control (ECDC) asking whether an increase

FIGURE

Cases of *Shigella sonnei* in an outbreak in Norway in May 2009, by date of illness onset or date of sampling (n=20)



in the number of *Shigella sonnei* cases had been registered in other countries. On the same day, the NFSA sent an information notice through the European Rapid Alert System for Food and Feed (RASFF). Based on information from the interviews, the main importer voluntarily recalled the product on 29 May. Further results from tracing of the food product and preliminary results from the microbiological investigation led the NFSA to prohibit all sales of sugar peas imported from Kenya later the same day.

Discussion

As a response to our urgent inquiry Denmark reported an increase in the number of domestic *Shigella sonnei* infections in April and May 2009. They initiated an outbreak investigation to find out if the Danish cases were related to the outbreak in Norway. The investigation in Denmark also pointed at sugar peas as the source of the outbreak, and microbiological investigations (including MLVA typing) to compare the outbreak strains are ongoing.

The trace-back investigation of the food product appeared to be very complicated, and the NFSA is still investigating together with the industry. Several whole-sellers are supplying sugar peas to Norway, and the product comes from several producers in Kenya. The two supermarket chains usually do not share the distribution system, but on some occasions they are supplied by the same whole-seller.

Only one previous outbreak in Norway has been associated with fresh vegetables. An increase in the number of domestic cases of *Shigella sonnei* infection was detected in several European countries in 1994, including Norway, Sweden and the United Kingdom [2]. In Norway 110 culture-confirmed cases of infection were recorded at the time. In all three countries epidemiological evidence incriminated imported iceberg lettuce of Spanish origin as the vehicle of transmission. The pathogen was not isolated from the suspected food product.

References

1. Brandal LT, Lindstedt BA, Aas L, Stavnes TL, Lassen J, Kapperud G. Octaplex PCR and fluorescence-based capillary electrophoresis for identification of human diarrheagenic *Escherichia coli* and *Shigella* spp. *J Microbiol Methods*. 2007;68(2):331-41.
2. Kapperud G, Rørvik LM, Hasseltvedt V, Høiby EA, Iversen BG, Staveland K, Johnsen G, Leitaø J, Herikstad H, Andersson Y. Outbreak of *Shigella sonnei* infection traced to imported iceberg lettuce. *J Clin Microbiol*. 1995;33(3):609-14.

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