

OUTBREAK OF VEROTOXIN PRODUCING *E. COLI* O157 INFECTIONS INVOLVING OVER FORTY SCHOOLS IN SOUTH WALES, SEPTEMBER 2005

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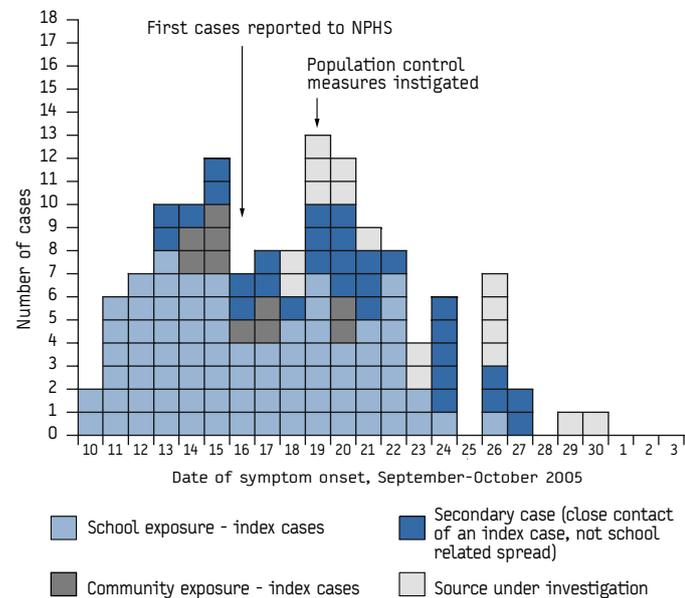
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By 3 October 2005, 157 cases of infection had been reported in an outbreak of verotoxin producing *Escherichia coli* (VTEC) O157 in south Wales in the United Kingdom [1,2]. A case was defined as any person living in south Wales who presented with bloody diarrhoea or had a faecal isolate of presumptive VTEC O157 in September. Ninety seven of the cases have been microbiologically confirmed as VTEC O157, and all are phage type (PT) 21/28 and produce verotoxin (VT) 2, with the exception of one case that is PT32 VT2. Four other microbiologically confirmed cases of *E. coli* O157 infection have phage types not associated with the outbreak (three VT-negative strains of PT1, and one isolate of PT8, VT1+2), and have been excluded from the outbreak case list because the patients have plausible alternative histories to explain their infection.

Sixty seven males and 90 females are affected, and 65% of cases (102/157) are in children of school age. Dates of symptom onset range from 10 to 30 September (Figure), and over forty schools have recorded cases. There has been one death, in a 5 year old boy.

FIGURE

Cases of VTEC O157 infection with known date of onset, outbreak in south Wales, September 2005 (n=133). Source: National Public Health Service for Wales, 4 October 2005



Evidence suggests a link between the outbreak and a supplier of cooked meats to the school meals services. The distribution of cases is small numbers of cases in a large number of schools, and suggests a centrally distributed product with low levels of contamination rather than a problem in individual schools. This was followed by secondary person-to-person spread.

Ten of the first 18 primary cases in infected schoolchildren with early symptom onset dates before 17 September were contacted between 16 and 20 September. All reported having eaten lunch in the school canteen, compared with 8 out of 13 controls who were selected at random from the school register (p<0.05). Overall, approximately 60% of children in the affected areas eat lunch in their school canteens each day.

A single main supplier distributes cooked meats to the affected

schools. Local authorities took action on 19 September, after identifying practices that could result in contamination of cooked meat at the supplier's premises, and the Food Standards Agency Wales issued a food alert on 21 September [3].

E. coli O157 has been isolated from three samples of sliced cooked meat obtained by environmental health staff. Isolates have been confirmed as PT21/28, VT2 and examined by pulsed field gel electrophoresis (PFGE). Results on cultures from two samples have so far shown that PFGE profiles of strains from the food samples are indistinguishable from those found in people with the infection. PFGE typing is continuing on the third strain. Contaminated cooked meats have been associated with previous outbreaks of VTEC O157 infection in the United Kingdom [4,5].

Control measures to remove ready-to-eat foods (that is, foods not cooked on the premises) from schools, and to cancel educational activities that facilitate person-to-person spread, have been in place since the week beginning 19 September and are under constant review by the outbreak control team.

This article has been adapted from reference 2.

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CHOLERA IN BELGIAN TOURISTS AFTER TRAVEL TO TURKEY

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Two confirmed and four probable cases of cholera have been reported in Belgian tourists returning from travel to Turkey. On 22 September 2005, the Gezondheidsinspectie (Health Inspectorate) in Antwerp was notified of the isolation of *Vibrio cholerae* in stool sample from a 62 year old woman. She was admitted to hospital in Antwerp on 17 September immediately after returning from a trip to Turkey, with watery diarrhoea, dehydration and renal failure. The clinical picture was initially unclear because she had undergone stomach surgery to treat cancer not long before the tour. The patient was admitted to hospital for four days and was treated with quinolones. Further testing confirmed infection with *V. cholerae* O1 biotype El Tor, serotype Inaba.

After notification of this case, an investigation was begun to collect epidemiological information, ascertain any other potential cases, identify the source and coordinate control measures. All tour group members were interviewed about potential exposures during the trip.

A second female patient had contracted severe gastrointestinal symptoms on 18 September. She was treated as an outpatient. A stool culture was also positive for *V. cholerae* O1. She was treated with quinolones and recovered. Four other patients, two men and one woman, contracted severe gastroenteritis shortly after their return. They were seen by their general practitioners and were treated with symptomatic therapy. Stool cultures were performed after these patients

had recovered and did not grow *V. cholerae*. All patients recovered after four days. No secondary cases were detected. The attack rate for the tour group was 6/8 (75%).

The tour group had travelled around west Turkey on a 14 day package tour. Group members, three men and three women, were aged between 58 and 68 years. They used a private bus, and at the end of their trip, they took an internal flight from Ankara to Istanbul.

During the journey they stayed at different hotels and visited Istanbul, Bursa, Efeze, Afrodiasias, Pamukkale, Kusadasi, Antalya, Cappadocia, Ilhara and Ankara. They ate in several small restaurants and also ate food bought at markets and shops. During the internal flight, a salad was served.

Control measures

All tour group members were informed of the risks, and advised to contact their general practitioner and provide a stool sample. General practitioners were advised about treatment and follow-up. Patients were advised to limit their contacts and to apply hygienic measures to prevent further transmission. Patients were not automatically admitted to hospital nor systematically treated with antibiotics. The World Health Organization (WHO), the Turkish health authorities and the European Early Warning and Response System (EWRS) were informed immediately after detection of the cases.

Discussion

Cholera is an acute bacterial enteric disease caused by an infection with *V. cholerae*, serogroup O1 or O139. *V. cholerae* includes two biotypes - the classical type and El Tor type. Each biotype has 3 serotypes (Inaba, Ogawa, and rarely Hikojima). Cholera may be present in an asymptomatic state, as a mild disease or as the typical syndrome characterised by a sudden onset and profuse, painless, watery diarrhoea. The incubation period varies from a few hours to five days and patients are infectious while they have diarrhoea and up to 7 days after [1,2].

Databases of cholera cases reported to the WHO last recorded cholera cases in Turkey in 1977, and no data was supplied from 1978-1992. To date, there have been no other recent cases of cholera reported from Turkey [3].

Only the two patients confirmed to have cholera were treated with antibiotics. The other patients received symptomatic treatment and recovered quickly. The patients had only a few contacts, and were not working on or participating in activities which could have facilitated secondary transmission.

The attack rate was rather high (75%). A seventh patient developed minimal diarrhoea five days after return from Turkey but was not considered as a probable case. The high attack rate probably represents a high infective dose and there could potentially be other cases in Turkish residents or in visiting tourists. There are unofficial reports of cholera outbreaks in countries in the region surrounding Turkey, such as Iran, Tajikistan and Afghanistan. [4,5,6]

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SALMONELLA TYPHIMURIUM DT104 OUTBREAK LINKED TO IMPORTED MINCED BEEF, NORWAY, OCTOBER – NOVEMBER 2005

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Outbreak alert

On 3 November 2005, four cases of multidrug-resistant *Salmonella* Typhimurium DT 104 infections were notified to the Infectious Disease Epidemiology Department by the Reference Laboratory of the Norwegian Institute of Public Health. The four isolates had identical multi-locus VNTR analysis (MLVA)-profiles (2-7-11-7-3) and antimicrobial resistance pattern (Amp-Chlor-Tet-Sulph-Strep-Nal). The same MLVA profile and resistance pattern was also detected in a routine sample of mixed meat that consisted of both Norwegian meat and meat imported from Poland. Further testing of unmixed samples showed salmonella growth only in the imported meat. This isolate was subsequently confirmed to have the same MLVA profile as found in the cases. Since sporadic infections by multidrug-resistant *S. Typhimurium* are very rare in Norway [1], detection of these cases prompted an immediate investigation.

Outbreak investigation

Three of the four patients were interviewed on 4 November to determine the time of symptom onset, illness duration and exposure history during the week before illness onset. These patients became ill between 2 September and 2 October and did not report any recent travel outside Norway before onset of symptoms. All three patients reported eating minced beef before becoming ill, and all of them tasted raw meat during food preparation. The beef product was bought frozen at national supermarket chain A during September. This information was immediately communicated to the Norwegian Food Safety Authority, which started tracing of the suspected beef. On 8 November, another patient was confirmed to have a salmonella infection with an MLVA pattern identical to one found in the index patients. This patient became ill on 7 October and also consumed the suspected meat.

An urgent enquiry was sent through the Enter-net network on 4 November and an alert was posted on the European Early Warning and Response System on 5 November. In response, Denmark reported two cases of *S. Typhimurium* DT104 with identical MLVA-profile and resistance pattern, one in a patient who had travelled to Poland. Some other countries have also reported cases of *S. Typhimurium* DT104 with the same resistance pattern. However, this is a relatively common type and further investigation and typing are needed in order to assess a possible link to the outbreak in Norway.

Product tracing and recall

The investigation indicated that the implicated beef was imported from Poland in June 2005. The consignment was accompanied by documentation that the batch had been controlled for salmonella and tested negative. The consignment was divided in three parts by the importer. The first part was sent to supplier 1, who took a routine sample of the meat. This sample tested positive for salmonella and had an MLVA profile indistinguishable to that of the cases. This meat was not released to the market. The second part of the original consignment was delivered to supplier 2 that produced minced beef and subsequently distributed it in frozen 400 gram packages in September and October via supermarket chain A. The remaining part of the initial shipment was stored by the importer; testing of this meat recovered *S. Typhimurium* DT104 with the same MLVA profile. Another sample was obtained from leftover frozen minced beef that was stored in a freezer of one of the cases: testing of this sample is pending. Based on epidemiological and microbiological data, the imported meat used for preparation of minced beef was suspected to be the source of this outbreak and the product was recalled from the market on 5 November. In addition, an announcement through mass media was made on the same day to warn the public not to consume this meat.