Non-food environmental exposure to *Escherichia coli* O157:H7 – the risks of cycling on muddy pathways

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A number of strains of *Escherichia coli* reside as harmless commensals of the human gastrointestinal tract. A minority of *E. coli*, however, are known to cause disease in humans, including the vero cytotoxin-producing *E. coli* (VTEC). In the UK, the most important VTEC strain is *E. coli* O157:H7, which can cause a spectrum of disease from mild gastroenteritis to bloody diarrhoea, and can be complicated by the potentially life-threatening condition of haemolytic uraemic syndrome (HUS) (Health Protection Scotland, 2013).

Transmission of *E. coli* O157:H7 characteristically occurs through the consumption of food or water contaminated by infected animal faeces. Non-food environmental exposure is, however, an important source of transmission, particularly in rural areas and where animals are open to the public such as farms and petting zoos. Accordingly, the Health and Safety Executive (2014) has released guidance on avoiding infection during farm visits.

We present a case of confirmed *E. coli* O157:H7 in a 23-year-old vegetarian man who presented with a three-day history of vomiting, abdominal pain and bloody diarrhoea. No history of consumption of undercooked vegetables or meats was reported and there was no obvious exposure to contaminated water. He denied recent contact with domestic or non-domestic animals or visits to farms or similarly high-risk environments (e.g. sewage works, petting zoos, bird reserves). No other risk factor was identified.

On further questioning, however, the patient did reveal his recent participation in a road cycling event eight days before the onset of illness. The incubation period for *E. coli* O157:H7 diarrhoea is typically three to four days after exposure, but can be as short as one day or as long as 14 days (Health Protection Scotland, 2013). During the event cyclists traversed rural roads and tracks in the east of Scotland, where wet and muddy conditions were considered likely to have exposed the patient to materials contaminated with infected animal faeces. The patient recalls a number of occasions during the event where mud and water splashed onto his face – the likely mode of transmission of the organism. He and other racers removed the mudguards from their bikes as a weight-reduction measure, likely potentiating the exposure to mud contaminated by *E. coli* O157:H7.

The patient was treated with supportive measures through the course of his illness and his symptoms settled. Typically patients improve after five to seven days (Health Protection Scotland, 2013). No complications of *E. coli* O157:H7 infection occurred in this case.

Non-food environmental exposure to *E. coli* O157:H7 is known to occur in individuals following visits to farms and other areas of public contact with infected animals (Health Protection Scotland, 2013). Sporting endeavours such as cycling and cross-country running events often take participants through such high-risk areas and may be an important cause of contact with *E. coli* O157:H7. This case highlights such exposure and should alert clinicians to the possibility of *E. coli* O157:H7 infection and the importance of individuals presenting with bloody diarrhoea with a history of participation in similar sporting or other events. Close liaison between the patient, local health protection teams and clinicians will further assist in the identification of likely sources of infection.

Declaration of conflicting interest

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