Letters to the Editor

Pet Reptiles Associated with a Case of Salmonellosis in an Infant Were Carrying Multiple Strains of Salmonella

A case of salmonellosis caused by Salmonella serotype Tel-el-kebir in an infant was linked with pet chameleons. Detection of multiple strains of Salmonella in chameleon excreta was achieved by a method designed for the detection of Salmonella in food. The advantages of this method over routine clinical microbiology procedures are discussed here.

A 3-month-old infant was admitted to the hospital with diarrhea and fever, and subsequent microbiological testing of fecal samples revealed the presence of Salmonella enterica subsp. (I) enterica serotype Tel-el-kebir. This strain of Salmonella is rare in humans in the United Kingdom (three cases were reported to the Communicable Disease Surveillance Centre in 1999, of 17,532 reported cases of Salmonella), but it has previously been found in association with pet reptiles (2).

An investigation of the child’s home found that a pet chameleon had free run of the living room, and chameleon excreta was found in the room. In addition, the infant’s grandmother, whom he visited frequently, kept eight chameleons in her home. The chameleon from the infant’s home had stayed at the grandmother’s house on a number of occasions.

Microbiological analysis was carried out on excreta collected from chameleons living in the infant’s home (address 1) and the grandmother’s home (address 2). The Public Health Laboratory Service standard method for isolation of Salmonella from food, which is very similar to the present British and European standard method (1), was used. This involved a preenrichment stage in which a 1-in-10 dilution of the sample was prepared in buffered peptone water, followed by incubation (37°C for 18 h). The broth was then subcultured to two selective enrichment broths, selenite cystine broth (1:10 dilution; incubated at 37°C for 22 h) and Rappaport-Vassiliadis soya peptone (RVS) broth (1:100 dilution; incubated at 41.5°C for 22 h). Finally, selective broths were subcultured onto two selective agar plates, brilliant green agar and xylose lysine desoxycholate agar. Plates were incubated for 22 h at 37°C.

Salmonella was detected in samples from eight chameleons. To increase the chance of detecting any strains of Salmonella serotype Tel-el-kebir that might be present, 16 presumptive positive isolates from each sample were selected for further identification (i.e., four isolates from each agar plate and from each selective broth). This resulted in the identification of seven different Salmonella strains, including Salmonella serotype Tel-el-kebir in three chameleons (Table 1). In total, 11 isolates were identified as Salmonella serotype Tel-el-kebir. Of these, 10 originated from RVS broth and 1 originated from selenite cystine broth. As indicated in Table 1, multiple strains were isolated from two animals: three different Salmonella strains were isolated from chameleon 4, including Salmonella enterica subsp. (I) enterica serotype Enteritidis phase type 52, a new phage type defined for the first time for these chameleon isolates, and Salmonella enterica subsp. (III) arizonae, a subspecies with known links to reptiles. Chameleon 8 yielded two serotypes. Salmonella enterica subsp. (IV) houtenae serotype Houten was isolated from chameleons 2 and 3. This subspecies is rare and found mainly in reptiles.

It has been recognized previously that exotic pets may be a source of salmonellosis (3, 4). However, it is interesting that multiple Salmonella serotypes occurred in two of the reptiles studied here (Table 1). Over 90% of reptiles may carry Salmonella, and up to five different serotypes have been isolated from a single reptile (3). Thus, it is our conclusion that when investigating reptiles implicated in human cases of salmonellosis, it may be necessary to select several presumptive Salmonella colonies from primary detection media for identification and serotyping, in order to detect the organism that is the cause of human disease. Moreover, the use of the more intensive method for the detection of Salmonella (designed for food analysis) may be recommended in this type of investigation, since the additional preenrichment stage compared to standard clinical microbiology methods is designed to resuscitate stressed organisms and ensure the growth of even low numbers of salmonellae to detectable levels. Furthermore, the use of two selective enrichment broths broadens the range of Salmonella strains likely to be grown. In this study, Salmonella serotype Tel-el-kebir was detected more readily from RVS broth than from selenite cystine broth (10 of 11 isolates were from RVS broth). In comparison, a selenite-based broth is used as a single enrichment medium in many clinical microbiology laboratories.

We are grateful to colleagues at the Southampton Environmental Health Department for collecting samples and liaising with patients’ families and to the Laboratory of Enteric Pathogens, Central Public Health Laboratory, Colindale, for carrying out the serotyping of isolates.

REFERENCES

<table>
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<tr>
<th>Location</th>
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a Numbers in parentheses indicate subspecies.
b RDNC, reacts with typing phages but does not conform to a recognized pattern. c --, Phase 2 H-antigens not present.
3:2–3.

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