Extended-spectrum β-lactamase-producing bacteria isolated from companion animals

SIR, – While there has been increased attention recently in both the scientific and popular press regarding the importance of antibiotic-resistant bacteria such as meticillin-resistant staphylococci, including meticillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant enterococci (VRE) and *Clostridium difficile* ('C diff') in companion and farm animals, as well as in humans, extended-spectrum β-lactamase (ESBL)-producing bacteria have, to date, not received as much prominence in the veterinary field. Guidelines for the laboratory detection of such isolates and clinical treatment of human cases have been compiled by the Health Protection Agency (HPA) and the British Society for Antimicrobial Chemotherapy (BSAC), which recognise the challenges presented by these bacteria (Livermore and Woodford 2004).

ESBLs are acquired class A β-lactamases that occur most commonly in Enterobacteriaceae (for example, *Escherichia coli* and *Klebsiella* species). These enzymes hydrolyse and confer resistance to oxyimino second- and third-generation cephalosporins, for example, cefuroxime, cefotaxime and ceftazidime (Bonnet 2004), and are associated with increased mortality and morbidity in humans, especially those in high-dependence units and intensive care facilities. Antibiotic treatment for ESBL-producing bacteria is limited chiefly to the use of carbanapems (for example, imipenem, meropenem and ertapenem).

In 2004, a case of CTX-M ESBL in *E coli* from dairy calves was the first reported case of this organism in food-chain animals in the UK. Articles in the Veterinary Laboratories Agency Annual Review 2006/07 and *The Veterinary Record* (October 27, 2007, vol 161, p 576) are timely.

To our knowledge, to date there have been no reports of ESBL-producing organisms isolated from, or responsible for infections in, companion animals. We have recently identified three cases of CTX-M ESBL-positive *E coli* isolated from dogs; two from wound sites and the third from a preputial discharge and urine of the same animal. These isolates were identified as CTX-M ESBL-producing strains using BSAC recommended techniques (Oxoid) and with biochemical identification as *E coli* using an API system (bioMérieux). In each case, the isolates were resistant to cefalexin, cefuroxime, ceftazidime, cefotaxime, marbofloxacin, enrofloxacin, cotrimoxazole, clindamycin, erythromycin, piperacillin, ticarcillin and gentamicin, and sensitive to imipenem and, in two of the three cases, tobramycin. A finding of note was that the isolate from the urine was sensitive to nitrofurantoin, an agent that has been recommended by the BSAC for the treatment of such organisms when isolated from human cases of urinary tract infection.

This is a worrying movement in resistance patterns that may, ultimately, have more important zoonotic implications than MRSA. Thus, the accurate laboratory detection of ESBL-producing bacteria is imperative in order that appropriate treatment is elicited and transfer to owners and other companion animals is minimised. It is likely that their recognition currently goes underdetected; such bacteria should be considered in companion animals with, for example, wound and urinary tract infections that do not respond to standard treatment regimens. Samples from suspected cases should be referred to a veterinary microbiology laboratory with the expertise to identify these, and other multiresistant organisms, and in order that appropriate surveillance can be undertaken.

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References

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