Small animal disease surveillance: pruritus, and coagulase-positive staphylococci

- Presentation for pruritus comprised 6.5 per cent, 3.6 per cent and 2.0 per cent of canine, feline and rabbit consultations, respectively, between January 2014 and June 2016
- Topical antimicrobials were the most commonly prescribed pruritus treatments for dogs (33.6 per cent of consultations); for cats, it was systemic glucocorticoids (53.5 per cent)
- In surveillance of coagulase-positive staphylococci, 16 per cent of 176 coagulase-positive staphylococci isolated from canine diagnostic samples were sensitive to all tested antibacterial classes; multidrug resistance (resistance to three or more antibacterial classes) was found in 6.8 per cent

Syndromic surveillance of pruritus

Pruritus, or itch, is defined as an unpleasant sensation that provokes the desire or reflex to scratch. It is common in many types of skin disorders. It is often accompanied by red, inflamed areas of skin and may lead to pyoderma. Pruritus is commonly associated with flea allergy and other allergic skin diseases. This report describe animals associated with flea allergy and other allergic pruritus, particularly in dogs. A third section (in the box on p 354) provides an update on one important and emerging antibiotic-resistant CoPS, namely meticillin-resistant Staphylococcus pseudintermedius. The fourth section provides a brief update on surveillance for gastrointestinal and respiratory disease, the syndromes analysed in previous reports. The final section, which aims to cover topical developments in companion animal infection worldwide, considers Aujeszky’s disease, rabbit haemorrhagic disease, babesiosis and tyme disease.

Report summary

This report is the third in a series produced by the Small Animal Veterinary Surveillance Network (SAVSNET) to a format discussed in Veterinary Record, December 12, 2015 (vol 177, pp 591-594). It comprises five sections. The first two sections focus on surveillance for pruritic skin disease in veterinary practice and for laboratory-confirmed diagnosis of coagulase-positive staphylococci (CoPS), which are frequently involved in skin disease and pruritus, particularly in dogs. A third section (in the box on p 354) provides an update on one important and emerging antibiotic-resistant CoPS, namely meticillin-resistant Staphylococcus pseudintermedius. The fourth section provides a brief update on surveillance for gastrointestinal and respiratory disease, the syndromes analysed in previous reports. The final section, which aims to cover topical developments in companion animal infection worldwide, considers Aujeszky’s disease, rabbit haemorrhagic disease, babesiosis and tyme disease.

provided by Sánchez-Vizcaíno and others (2015) in Veterinary Record, December 12, 2015, vol 177, pp 591-594.
In total, EHRs for 1,816,816 consultations were collected (including repeat consultations for the same animal), of which 70.0 per cent were from dogs, 26.1 per cent cats, 1.4 per cent rabbits, 1.2 per cent other species and 1.3 per cent where the species was not noted. Presentation for pruritus, as indicated by the veterinary surgeon’s categorisation, comprised 6.5 per cent, 3.6 per cent and 2.0 per cent of canine, feline and rabbit consultations, respectively.
Short questionnaires relating to the anatomical location of the pruritus, the diagnostic tests planned and treatments recommended (Sánchez-Vizcaíno and others 2015) were completed for 19,515 animals (15,527 dogs, 3,535 cats, 92 rabbits, 233 other species and 128 species not noted) based on a single questionnaire randomly assigned to a proportion of these pruritus patients. A substantial proportion of dogs (19.5 per cent) and cats (18.1 per cent) were presented after a long history of illness (over one year). Diagnostic tests were planned in 21.8 per cent of dogs and 25.2 per cent of cats with pruritus, with cytology (5.9 per cent) and skin scrape (3.8 per cent) being most common in dogs, and hair pluck (3.1 per cent) and adhesive tape strip (2.9 per cent) the most common in cats. Microbial culture was planned in 3.0 per cent of dogs and 1.4 per cent of cats. The most frequent location of pruritus was ears (44.4 per cent) and feet/limbs (26.5 per cent) in dogs, and, in cats, the dorsal body (46.4 per cent) and face (28.9 per cent). The results relating to the treatments recommended are shown in Table 1.

The spatial distribution of the relative risk for pruritus was evaluated in dogs and cats in England and Wales for each season of the year (Fig 1). Estimates for Scotland
and Northern Ireland are not included because geographical coverage in these areas is currently limited. Animals were considered as ‘cases’ if, during the season assessed, they presented for pruritus at one or more consultations. The spatial variation of the relative risk for pruritus throughout England and Wales was smoothed using a kernel smoothing method. The relative risk for pruritus throughout the year in contrast, the picture in cats appeared more stable, with lower numbers of zones at high relative risk for pruritus compared with dogs, with winter having no zones of the highest relative risk. Together, these data reaffirm the different pattern of presentation for pruritus between cats and dogs, and suggest that the relative risk for pruritus varies spatially and temporally. It should be noted these zones may not equate to outbreaks; SAVSNET is currently developing models to allow outbreaks to be identified.

**Laboratory-based surveillance of coagulase-positive staphylococci in the UK**

Although there are a large number of species of coagulase-positive staphylococci (CoPS), the two most clinically relevant are *Staphylococcus aureus* (SA) and *Staphylococcus pseudintermedius* (SP) (Bannoehr and Guardabassi 2012), with SP being most common in companion animals (Ruscher and others 2009). Despite the emergence of meticillin resistance in both SA and SP (MRS, MRSP), there have been no attempts to form ongoing surveillance for CoPS in companion animals in the UK. SAVSNET collates anonymised results of clinical sample testing in diagnostic laboratories, including antimicrobial resistance testing. This section describes the phenotype of 184 canine CoPS isolates. Although SAVSNET receives antibacterial resistance data from several laboratories, the complexity of these data, and the differences in formatting between laboratories, currently limit its ability to compare the results from more than one laboratory. Therefore, this first summary is limited to an analysis of those data received from one laboratory during 2015.

CoPS was frequently isolated with other bacterial species; 21.3 per cent of samples also contained streptococci; 7.1 per cent also contained *Pseudomonas aeruginosa*; 3.8 per cent also contained *Escherichia coli*; 2.2 per cent also contained *Proteus* species; 2.2 per cent also contained *Pasteurella multocida*; 1.1 per cent also contained *Enterococcus* species, and 0.5 per cent also contained coliforms.

A total of 176 CoPS (95.7 per cent) had resistance seemed particularly prevalent for extended penicillin (amoxicillin) classes where 69.1 per cent of tested isolates displayed resistance to that particular class as a percentage of all isolates tested.

**TABLE 1: Percentage of treatments recommended in 15,527 dogs and 3535 cats presenting with pruritus to veterinary practices in the UK (January 2014 to June 2016)**

| Treatment                  | Number (%) of dogs | Number (%) of cats |
|----------------------------|--------------------|--------------------|
| None                       | 985 (6.3)          | 190 (5.4)          |
| Antiparasitic              | 2121 (13.7)        | 1372 (38.8)        |
| Topical antimicrobial      | 5216 (33.6)        | 412 (11.7)         |
| Systemic antimicrobial     | 4065 (26.2)        | 1871 (53.5)        |
| Topical glucocorticoid     | 3926 (25.3)        | 346 (9.8)          |
| Systemic glucocorticoid    | 4592 (29.6)        | 1891 (53.5)        |
| Essential fatty acid       | 411 (2.6)          | 43 (1.2)           |
| Supplements                | 1669 (10.7)        | 30 (0.8)           |
| Shampoo                    | 1881 (12.1)        | 133 (3.8)          |
| Ear cleaner                | 2799 (18.0)        | 368 (10.4)         |

* More than one treatment could be recommended per consultation

Common veterinary practices in the UK (January 8, 2016)

**TABLE 2: Percentage of canine coagulase-positive staphylococci isolates that were tested for sensitivity against particular antibacterial classes, and the percentage of isolates displaying resistance to that particular class as a percentage of all isolates tested**

| Antibacterial class          | Number of isolates tested | Number (%) of isolates resistant |
|------------------------------|----------------------------|----------------------------------|
| *Amoxiclav*                  | 176                        | 1 (0.6)                          |
| *First-/second-generation cephalosporins* | 176 | 2 (1.1) |
| *Fluoroquinolones*          | 176                        | 8 (4.5)                          |
| *Lincomamides*              | 104                        | 15 (14.4)                        |
| *Extended-spectrum penicillins* | 97  | 67 (69.1) |
| *Macrolides*                | 90                         | 12 (13.3)                        |
| *Aminoglycosides*           | 81                         | 6 (7.4)                          |
| *Polymixins*                | 81                         | 81 (100.0)                       |
| *Tetracyclines*             | 14                         | 2 (14.3)                         |
| *Amphenicols*               | 6                          | 16 (6.7)                         |

**FIG 1: Kernel intensity ratio surface of England and Wales showing the relative risk of dogs and cats being presented with pruritus by season. The colours for relative risk have been categorised using the four cut-offs that divide the results obtained from dogs during spring into five equal-size groups (quintiles) each containing 20 per cent of all results**
Of the 12 MDR isolates, 10 displayed resistance to three antibacterial classes, of which lincosamide-macrolide-extended penicillin resistance was most frequent. Two further isolates displayed resistance to four antibacterial classes; lincosamide-fluoroquinolone-ampicillin-first-/second-generation cephalosporins, and amoxicillin-extended-sulbactam-extended-fluoroquinolone-extended-amoxiclav-first-/second-generation cephalosporins, respectively. Specific phenotypic testing for MRSA and MRSP (cefoxitin and oxacillin) was rare in this population, but where it was carried out, it was negative.

The results indicated that although CoPS displaying a level of resistance are common, MDR would appear relatively rare in this population, but where it was rare in this population, where it was carried out, it was negative.

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Babesia in the UK

The distribution of canine babesiosis is largely driven by the habitat of its tick vector *Dermacentor reticulatus*. In the UK, this vector was largely considered absent, such that canine babesiosis was sporadic and generally restricted to internationally travelled animals. In February 2016, three cases of *Babesia canis* were reported in one Essex veterinary practice in dogs that had not travelled abroad. So far, all the available evidence suggests these home-grown (autochthonous) cases in untravelled dogs are rare and associated with what currently appears to be a small pocket of *D reticulatus* in the Chelmsford area. Real-time updates on *Babesia* and other pathogens are available at www.savsnet.co.uk/realtimedata

Rabbit haemorrhagic disease

Rabbit haemorrhagic disease virus (RHDV) type 1 has been endemic in the UK for many years and vaccines are available to protect pet and farmed rabbits. More recently, a new form of the virus, RHDV-2, has been reported, initially in France in 2010, with the first UK cases being reported in 2013. Although hard surveillance data are lacking, the virus appears to be spreading.

The clinical signs vary from sudden death, to a more prolonged and progressive illness. Some rabbits appear to develop asymptomatic infections that may help spread infection. Unlike the original strain, RHDV-2 can also affect even very young rabbits. Field data suggest that at least some classic RHDV-1 vaccines fail to protect against RHDV-2. Vaccines against RHDV-2 are available elsewhere in the EU and may be imported under the Special Import Scheme (www.gov.uk/government/news/rabbit-haemorrhagic-disease-virus-type-2-vaccines).

Lyme disease

In April, the PDSA reported an increase in the number of known and suspected cases of Lyme disease, an important tick-transmitted infection that can affect dogs, less commonly cats, and also people.

Lyme disease is caused by *Borrelia* species (notably *Borrelia burgdorferi*) and is transmitted by *Ixodes* species ticks. It is not transmitted from pet animals directly to their owners. Not all ticks carry *Borrelia*, and even when they do, not all bites transmit infection.

Clinical signs can be vague, making clinical diagnosis hard. While skin rashes in people may be pathognomonic, laboratory testing and interpretation is complex. As a result, there remains a lot of uncertainty about the precise burden of disease in the UK. Vets might consider testing for Lyme disease in animals presenting with acute polyarthritis with recent tick exposure. When visiting areas where ticks are active, people should take steps to reduce tick bites, and promptly remove biting ticks (www.gov.uk/government/uploads/system/uploads/attachment_data/file/521829/Ticksandyourhealthinfoabouttickbites.pdf).

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