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RECURRENT STAPHYLOCOCCAL INFECTIONS IN DOGS
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CONSIDERATION OF UNDERLYING CAUSE
To every veterinarian’s frustration, staphylococcal skin infections can be stubbornly recurrent in some dogs. The client (and the veterinarian) must understand that staphylococcal bacteria are in essence normal flora; infection cannot occur unless something has gone wrong with the skin or its defense systems. Thus, particularly with recurrent infections, the first step is to attempt to define the underlying cause with appropriate diagnostic investigation. In younger dogs with recurrent infections, common causes of recurrence include external parasites and allergic disease. Older animals can also develop recurrent infections from hypothyroidism, or any other underlying systemic disease. Despite thorough testing, some patients with recurrent infections defy diagnosis – their infections respond completely to antibiotic treatment, yet continue to recur soon after such treatment is discontinued. For such patients with “idiopathic recurrent pyoderma” there are several measures that may help to prevent or limit recurrence.

ANTIMICROBIAL TOPICAL TREATMENTS
Antimicrobial topicals are the first line of defense with recurrent skin infections. Shampoos containing chlorhexidine, benzoyl peroxide, or phytosphingosine appear especially helpful when used twice weekly and allowed to remain on the pet for 5-10 minutes before rinsing. Obviously, any product that is formulated to remain on the skin, or that has a prolonged antimicrobial action, is preferred here. For localized areas, treatment with 2% mupirocin ointment is highly effective and avoids the need for systemic antibiotics. For broader regions of the skin, spray-on or “leave-on” conditioner products containing chlorhexidine and/or phytosphingosine are recommended. Recently, products containing saccharide molecules that interfere with attachment of bacteria and yeast to the skin (“glycotechnology”) have become available, and may be of benefit in limiting colonization. The overall principle here is to limit, to the extent possible, prolonged or repeated courses of antibiotic treatments so as to minimize the potential for development of antibiotic resistance.

IMMUNOMODULATION
Immunomodulatory therapy can be remarkably effective for some patients with idiopathic recurrent superficial pyoderma. Its use for recurrent deep pyoderma, or for recurrent pyoderma associated with allergic disease, is less well studied. Immunomodulatory drugs, such as levamisole and cimetidine, do not appear to be effective for this use. On the other hand, staphylococcal bacterin products are very useful. These “staph vaccines” are either available commercially (Staphage Lysate SPL®) or are prepared by a local laboratory as autogenous bacterins. They generally must be used long-term to prevent recurrence, however their use avoids the necessity for prolonged antibiotic treatment in some pets. SPL is administered at 0.5 cc subcutaneously, twice weekly, for a trial period of 10 weeks. During the first 4 weeks of injections, antibiotics are administered concurrently. After 4 weeks, the antibiotics are stopped, and the injections continued. Success is manifested as failure to relapse, much milder relapse, or infrequent relapse as compared to before use of the SPL. If SPL is effective, it can usually be reduced to once weekly injection, and sometimes once every 2 weeks.

EMERGENCE OF RESISTANT STAPHYLOCOCCI
There has been a recent worldwide increase in reports of multi-drug resistant staphylococcal strains in dogs. In particular, the methicillin-resistant staphylococci (MRS) are of concern. If the organism is methicillin-resistant in the laboratory, it will be clinically resistant to all penicillins and cephalosporins. Appearance of resistant strains seems to occur most commonly in dogs treated with repeated courses of multiple antibiotics for recurrent infections. What is the significance of these organisms? Firstly, if you treat a dog with staphylococcal pyoderma with a beta-lactam antibiotic (cephalosporin or penicillin) and there is incomplete or no response, culture and susceptibility testing is now mandatory. Fortunately, most veterinary strains of MRS are still susceptible to routine antibiotics such as trimethoprim-sulfa, clindamycin, or a fluoroquinolone. If you have such a patient in your
hospital, you need not have the dog under full isolation procedures, but you should isolate the patient to the extent that you can, and minimize traffic from this patient to other dogs in the clinic, especially the surgical and critical care areas.

Secondly, if you do identify an MRS organism, especially if it appears to be very resistant, you should order a staph speciation test. If the organism turns out to be a highly resistant methicillin-resistant, human-origin Staphylococcus aureus (MRSA), the owner should be notified of this fact so they can discuss the situation with their own health care provider. This patient is a potential human health hazard and should be considered so until the infection is fully treated. Appropriate hand hygiene procedures (gloves) should be used for examination, and full isolation precautions should be used if the patient must be hospitalized. The goal is to avoid colonization of in-contact human beings with the resistant strain.

The emergence of MRS in the veterinary world suggests that we must redouble our efforts to use antibiotics wisely and judiciously, and reconsider all efforts to use alternative non-antibiotic treatments if possible in the face of recurrent infections.