Approach to the Chronic Itchy Dog, Parts 1 and 2
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The office visit and the Chronic Pruritic Dog
The veterinarian is often faced with a situation in which a chronic skin case is scheduled for a 15-minute appointment or is coming in for something else, such as a vaccine, with the additional comment of "check skin." In most cases and especially chronic or recurrent cases, there are often multiple components to the skin condition. Client education regarding multiple diseases as well as treatment options and plans need to be explained. These discussions with all of their components are most likely to take 30 to 45 minutes and often overwhelm and confuse the typical client. Thus, starting off with a 15-minute appointment and making a follow-up appointment is a good approach, and there are key components that can make the 15-minute appointment a success.

Key Components for Success
1. Be positive and assure the client the problem can be determined.
2. Set up expectations and educate the client.
3. Determine the type and pattern of lesions present.
4. Eliminate simple things first; address the rest on follow-up.
5. Go over the checklist of what to accomplish.
6. Chronic or recurrent cases will need follow-up; often the main problem is determined at follow-up.
7. Diagnosing atopic dermatitis.
8. Trial therapies.

Be Positive
Most chronic or recurrent skin diseases are not going to be completely and definitively diagnosed and controlled in one visit. In most cases, the dog will have more than one disease and require tests that will take some time to get results. Initial test results may indicate that more tests are needed, and long-term therapy and monitoring may be required. Diet changes are often indicated, and determining the response to these may take several months. The first step in approaching the chronic case is to be positive and assure the owner that, through a process that requires their input, you will be successful in determining the problem and the best way to manage or treat it. Clients may become more frustrated when veterinarians indicate that they aren’t sure of the cause or are vague about the cause of the dog’s skin problems. It is important that you immediately communicate to the client that you can “fix this,” but it will not be instantaneous.

Set Up Expectations and Educate the Client
Chronic pruritic diseases are usually lifelong. It is crucial that the client be made aware of this as soon as the disorder is determined to be a problem. They need to know that cases are often complex and may have more than one contributing factor, and the most important thing they must realize is that you are a team. The goal is to find out what is causing the dog’s problem and how best to manage the cause or causes. You will need to rule out certain possibilities and probably try several methods of control over the pet’s life. It is critical for the owner to carefully watch for any changes with any given therapy, be available for rechecks, and provide information that only they can.
As discussed, the history is very important but tends to be dependent on owner observations and the skill of the clinician in questioning and training the owner. Training the owner to observe and make more accurate observations is an excellent way to improve the quality of information that he or she provide. This training can be done while the clinician performs the dermatologic examination and during the time it may take the technician to prepare and/or read samples for cytology and skin scrapings.

The Clinical Examination-
Pruritus is associated with numerous dermatologic and some nondermatologic diseases. Some dogs can develop pruritus as the result of a typically nonpruritic disease, and other animals with classic pruritus-causing diseases may not manifest pruritus. When approaching a case of pruritus, it is important to realize that even though a wide manifestation of diseases may be involved, there really are only a few common, consistent causes of chronic or chronic recurrent pruritus. (Table 1) It is most efficient to learn to rapidly identify and address the common causes, particularly because many cases will have more than one common cause. When features do not fit or common causes have not been determined, then a search for a less common cause should begin. Practitioners who do not excel at recognizing the less common causes of pruritus and have completed the list without isolating the cause may need to refer or ask for assistance.

Table 1. Common Causes of Canine Pruritus

<table>
<thead>
<tr>
<th>Primary Diseases</th>
<th>Secondary Causes</th>
<th>Modulating Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atopic dermatitis/otitis</td>
<td>Pyoderma</td>
<td>Xerosis</td>
</tr>
<tr>
<td>Flea allergy/Fleas</td>
<td>Bacterial overgrowth</td>
<td>Psychogenic</td>
</tr>
<tr>
<td>Adverse food reactions</td>
<td>Malassezia</td>
<td></td>
</tr>
<tr>
<td>Scabies</td>
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</table>

As discussed the history is critical in obtaining data that helps to determine the most appropriate differential diagnosis for a pruritic case. Finding lesions compatible with the different differentials as well as finding lesions not compatible with a differential diagnosis are also very important in establishing the most probable differentials. The pattern where the pet is itchy and whether itch is always associated with lesions or involves non lesional skin is a key feature. This occurs by combining the dermatologic examination with the history. AD, flea infestation and psychogenic are the most likely causes of pruritus with no lesions. Subtle differences in patterns are important to note. A good example is aural pruritus, which is often present in AD, adverse food reactions, and sarcoptic mange. However, the pattern of sarcoptic mange usually begins with pinnal apex margin disease, and AD occurs on the external orifice of the ear as well as the sparsely haired concave pinna base. Adverse food reactions may mimic AD or be confined to the horizontal and vertical ear canal. Once secondary infections occur, all three diseases may appear similar. The elbows are another example of subtle pattern differences, as sarcoptic mange is usually caudal and present on the lateral elbow, whereas AD occurs on the anterior flexure fold. Dorsolumbar involvement is more prevalent with flea allergy dermatitis and adverse food reactions. Whereas flea infestation is more ventral than flea allergy dermatitis.

Get samples of suspect lesions
The most efficient use of your time involves taking samples as lesions are identified, particularly if they may represent microbes or parasites. Most often this means collect your cytology samples during your examination and any lesions that suggest *Demodex*
or scabies will need to have skin scrapings or trial therapy recommended. As soon as the examination is complete the samples can be given to a technician for staining or reading while you are starting to educate the client about what is involved in the chronic pruritic dog your initial differential diagnoses.

Lesions and Patterns
Pattern analysis of both lesions and pruritus is of paramount importance in developing the most likely differential diagnosis. The three primary diseases that are most confounding to clinicians are AD, adverse food reactions (AFR), and scabies. The fourth common pruritic disease is flea allergy dermatitis (FAD), which is slightly less of a diagnostic challenge because it has a characteristic dorsolumbar pattern. However, this pattern may also be seen in dogs with AFR. FAD is also important to recognize because it may be concurrent with AD or AFR and can exacerbate those diseases when they are marginally controlled. This leads us to the key clinical features of the Big Four in Table 2.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Atopic Dermatitis</th>
<th>Adverse Food Reaction</th>
<th>Scabies</th>
<th>Flea-Allergy Dermatitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at onset</td>
<td>6 months – 7 years</td>
<td>Any but increased when &lt;6 months</td>
<td>Any</td>
<td>Young</td>
</tr>
<tr>
<td>Breed</td>
<td>More in terriers, golden retrievers</td>
<td>Shar-peis, Labrador retrievers, cocker spaniels, German shepherds, English bulldogs</td>
<td>Any</td>
<td>Any</td>
</tr>
<tr>
<td>Seasonal</td>
<td>Strongly suggestive</td>
<td>No</td>
<td>No</td>
<td>Maybe</td>
</tr>
<tr>
<td>Papules</td>
<td>No</td>
<td>Variable</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Otitis</td>
<td>External orifice, concave pinnae</td>
<td>Horizontal and vertical canal</td>
<td>Pinnal margin initially</td>
<td>No</td>
</tr>
<tr>
<td>Pinnal pedal reflex</td>
<td>Less than 10% if no otitis</td>
<td>Less than 10% if no otitis</td>
<td>Common</td>
<td>Negative</td>
</tr>
<tr>
<td>Sneeze</td>
<td>Yes</td>
<td>Yes (Rare)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>GI signs</td>
<td>No</td>
<td>Common</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Pruritus w/out lesions</td>
<td>Common</td>
<td>Occurs</td>
<td>Rare</td>
<td>Infrequent</td>
</tr>
<tr>
<td>Dorsolumbar</td>
<td>No</td>
<td>Yes</td>
<td>Rare</td>
<td>Yes +</td>
</tr>
<tr>
<td>Elbows</td>
<td>Anterior elbow flex fold</td>
<td>Any</td>
<td>Lateral</td>
<td></td>
</tr>
<tr>
<td>Conjunctivitis</td>
<td>Yes (10%–30%)</td>
<td>Some; percentage unknown</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

The possibility of coexisting primary diseases should also be considered. Although controversial, it has been reported that up to 40% of dogs that seem to have AD with perennial signs are diet responsive and half of these have concurrent AFR and AD [1].

Eliminate Simple Things First
Once you have started the explanation and gotten the owners approval you can proceed to interpret the findings from the cytology and any skin scrapes. If microbes are present then depending on the lesions and patterns and history your most likely differential
diagnosis is determined and you already have enough to develop a plan and prepare the client for the follow up visit.

When bacterial overgrowth, and bacterial or yeast infections are present it is valuable to treat those before establishing the optimum long term treatment plan the allergic dog. If the clinical examination suggests fleas or scabies may play a role then these also should be ruled out. If fleas or scabies are not suspect and gastrointestinal signs are present then food reactions should be ruled out. Even if fleas are suspected this may be something to consider at this visit for some clients. The client should be educated that any of these simple disorders may cause itching, and once they are eliminated then it is possible to determine whether the pet has a primary chronic pruritic disease or a nonpruritic problem. At the follow-up examination, it is important to determine whether the pet is still itchy, how itchy it is, and what is the pattern of itching. Having the owner show you exactly where the pet has been scratching will help you to know where normal-appearing skin is itchy.

The most common cause of itching in dogs with chronic pruritus is microbial disease; therefore, this should be tested for first. In AD cases, secondary pyoderma is present in approximately 80% of the cases and *Malassezia* in 35%. It may be even more prevalent based on how aggressively one looks for secondary infections. This is done by recognizing and treating the microbial component without treating allergic disease or only temporarily treating allergy. On follow-up, you can then determine the extent to which pruritus has resolved and establish the degree of signs that result from the underlying primary pruritic disease. If there is no pruritus at follow-up, it is unlikely that AD is the primary disease because it is by definition pruritic. However, the presence of pruritus needs to be established based on the pet's behavior and not the owner's interpretation of what is significant pruritus.

**Go Over the Checklist**
If none of the simple things are present, then you can move on to the probable allergic dog. One or more of these are often present in chronic skin cases, and eliminating them and seeing what is left is often easy and the first step in the approach to determining a cause and how best to control chronic pruritus. This is generally the main goal for the first appointment, and for this appointment the checklist in Table 3 is very useful.

<table>
<thead>
<tr>
<th>Item to Check or Complete</th>
<th>√</th>
<th>Solution/Plan/Treatment</th>
<th>√</th>
</tr>
</thead>
<tbody>
<tr>
<td>Be positive</td>
<td></td>
<td>Explain that things can be controlled if steps are followed</td>
<td></td>
</tr>
<tr>
<td>Establish lesions and pattern of pruritus</td>
<td></td>
<td>Derm exam, pruritus history, and educating client about what to observe</td>
<td></td>
</tr>
<tr>
<td>Bacterial overgrowth</td>
<td></td>
<td>Topical antimicrobial therapy, possible systemic antibiotic</td>
<td></td>
</tr>
<tr>
<td>Pyoderma</td>
<td></td>
<td>Systemic antibiotic therapy</td>
<td></td>
</tr>
<tr>
<td><em>Malassezia</em></td>
<td></td>
<td>Systemic antyeast</td>
<td></td>
</tr>
<tr>
<td>Fleas</td>
<td></td>
<td>Flea control, possible avoidance techniques added</td>
<td></td>
</tr>
<tr>
<td>Scabies</td>
<td></td>
<td>Selamectin</td>
<td></td>
</tr>
<tr>
<td>Educate client about initial goals</td>
<td></td>
<td>Review findings and solutions for today</td>
<td></td>
</tr>
<tr>
<td>Is it diet trial time</td>
<td></td>
<td>Determine if this is a discussion for today or next visit</td>
<td></td>
</tr>
<tr>
<td>Recheck evaluation</td>
<td></td>
<td>Schedule appointment and goals at recheck</td>
<td></td>
</tr>
</tbody>
</table>
Follow-up
The owner has been instructed on what the goals are and what information is important. The response to the initial plan and the owners educated observations will be assessed at the recheck evaluation. If pruritus is absent then the dog probably does not have AFR or AD. If pruritus is still present, especially in areas with no lesions or just mild erythroderma, infections were eliminated, and fleas and scabies were ruled out, then AD or food-induced AD is likely.

Diagnosing canine atopic dermatitis
History and physical clues are the most important aspect in tentatively diagnosing atopic dermatitis. A large study by Favrot et al has determined the best diagnostic criteria for canine atopic dermatitis.[2] They evaluated 1, 542 dogs with 34 dermatologists from 15 countries and developed two sets of questions with differing sensitivity and specificity that allow the most accurate clinical diagnosis of canine atopic dermatitis. If the answer is yes to at least 5 of the following 8 criteria in set 1 then the sensitivity for atopic dermatitis is 0.857. The underlined question differ from the second set of criteria.

1. Age at onset <3 years
2. Mostly indoor
3. Corticosteroid-responsive pruritus
4. Chronic or recurrent yeast infections
5. Affected front feet
6. Affected ear pinnae
7. Non-affected ear margins
8. Non-affected dorso-lumbar area

If the answer is yes to 6 of the 7 following criteria then the specificity for atopic dermatitis is 0.937 however this includes food induced atopic dermatitis. The underlined criteria are different from set 1.

1. Age at onset <3 years
2. Mostly indoor
3. Pruritus sine materia at onset
4. Affected front feet
5. Affected ear pinnae
6. Non-affected ear margins
7. Non-affected dorso-lumbar area

Trial therapies
Scabicidal therapy
Whenever one is highly suspicious of scabies or when the pinnal pedal reflex is positive it is worthwhile to rule out scabies. Negative skin scrapings do not rule it out so in some countries it is better to do serologic testing. Scabies is simple to rule out with selamectin every two weeks for three treatments, which also contributes to good flea control. Moxidectin is also effective. Revolution and Advantage Multi are labeled products for scabies in the United States.

Flea control
Fleas can also be a confounding factor in the chronic itchy dog even if it is not allergic to flea saliva. A recent study showed all dogs with at least 10 fleas had abnormal pruritus.[3] This study also showed very effective flea control had a dramatic effect on reducing pruritus and that it can take up to 3 months to see the complete effect, though a beneficial response was seen within one month. The reduction of pruritus was best
associated with the percentage of flea free dogs. Other studies showed when dogs are
mainly indoors they can be typically made flea free when products that kill fleas within 24
hours (spinosad and fluralaner) are used for at least three months.[4, 5] Good flea
control means all dogs and cats that enter the house and potential the yard are treated
with effective flea adulticides that prevent egg production or are used in combination with
effective insect growth regulators such as lufenuron. Aggressive flea control should be
done for at least a six-week trial period during which time it is important to see if there is
a change in the level or pattern to pruritus. At the end of the trial it is important to
continue observing for any exacerbation, which is the challenge period, and in some
cases it is only during this challenge that the role of fleas and possible even the source
of the fleas is determined. Since no commercial product prevents fleabites for more
than short periods of time it is important to use products that rapidly kill or repel fleas.
Products that fit the aggressive flea control requirements include: afloxolaner monthly,
dinotefuran* q 21 days, Imidacloprid* q 21 days, imidacloprid with flumethrin collar*,
indoxacarb* q 30 days, fluralaner, Nitenpyram q 48 h and Spinosad q 21 days. If * products
are used then bathing is not allowed during the trial. Additionally, since no product
100% prevents fleabites, the dog should avoid all possible flea “hot spots”. These are
areas where fleas may be effectively leaving eggs and the larval and pupal stage has a
high chance of survival. This is the component the really equated to aggressive flea
control, at least for 6 week limiting access to where fleas develop. A history of potential
exposure to these hot spots is obtained and the owner needs to make sure the dog does
not enter these locations. Often this means confining the dog indoors as much as
possible and limited outside time to leash walks that avoid shaded areas with vegetation
and organic debris on the surface of the ground. Also areas frequented by raccoons,
opossums and cats should be strictly avoided. Opossums like to frequent bird feeders
at night.

Diet trial
Diagnosis of AFR is based on an elimination diet trial (EDT) showing resolution of signs
(partial or complete) when foods are avoided and recurrence of those signs with
subsequent exposure to the food (provocation). Performing diet trials correctly is not
easy. The key to success is client education and obtaining client compliance. Getting
good compliance is accomplished by educating clients about the key points but also
about the options and what a improper diet trial results in. The clients need to realize
that missing food allergy when it is present will have long term ramifications. The pets
will have life long disease that is more resistant to allergy therapies and in many cases
the pet will have low grade discomfort even when it appears the allergy signs are
controlled by other therapies. It is more likely these pets end up on stronger drugs or
higher doses which means more costs for monitoring and treating adverse reactions.

Client Education
Key points need to be emphasized to owners before starting a diet trial. Establish
baseline symptom scores before the trial is started because this provides the
comparison for future responses and exacerbations. It is preferable to establish these
scores without concurrent microbial disease. Therefore, baseline signs are often
determined at a recheck when the pet is on other medications, such as antibiotics and
antiyeast medicine. Symptom scores should record the extent and the pattern of
pruritus. Grade at least lesions and pruritus of the paws, perineum, dorsal trunk, and
ears. For example, the dog may still have grade-10 disease at the end of the trial even
though the pruritus of the ear or dorsal lumbar have totally resolved; such cases often
indicate that the dog has a combination of allergies. Clients must be educated on how to
recognize a response in their pet, and this can only be done if they pay close attention during the challenge phase. Owners of nonresponsive cases must always be counseled that though they do not think the diet has helped they need to see whether any changes occur after reintroduction of the old diet. A critical point is all diet trials only end after a recheck and dermatologic examination, not by phone or when the client feels it has not worked.

An important but often difficult aspect to control is other sources of foods the animal may ingest. Preventing consumption of other foods often means keeping animals confined indoors with outside exposure controlled, such as on a leash. I have also had cases that require a puzzle to prevent inappropriate food consumption. The owners must be aware that the dog should consume nothing but what is in the diet, so that precludes other pets’ food, treats, medication wrapped in food and even alone, chewable forms of dog vitamins, and supplements. To also avoid problems it should be emphasized to clients that the number one job is to “make sure their dog ingests only water and the food you have okayed, anything else can result in failure.” It takes very little for signs to flare. This key statement prevents owners from blaming the vet when they realize something the pet was eating and the diet trial was ineffective. So often I hear the refrain, “My vet didn’t tell me I could not give that!” The whole family must be aware of the dietary requirements. Dogs need to be prevented from cleaning floors of crumbs. The presence of young children in a household often precludes any chance of controlling a diet in an indoor pet. Coprophagia must also be prevented. There is a report that a food-allergic dog that ate cat feces did not respond until the housecat was also put on a similar hypoallergenic diet.

**Phases of a Diet Trial**

A diet trial performed correctly has several phases. Putting the pet on a new diet—referred to as the elimination diet—is the first step. During this phase, clients observe the pet for changes, generally the resolution or reduction in signs. Once changes are noted or the predetermined end point of the trial is reached, then the pet is again fed the diet it was on before the elimination diet. This is the initial challenge phase. If pruritus does not recur, then the next phase is making sure the pet is ingesting all the things it used to ingest, the complete challenge. Any recurrence of signs is a positive provocation and the first step toward a tentative diagnosis. In my opinion, the most important confirmation of the diagnosis is when signs remain resolved in the second challenge. Absolute confirmation requires ingredient-provocation testing, which involves multiple episodes of positive provocation evidenced by exacerbation of signs when the offending ingredient is added and resolution of signs when it is withdrawn.

**The Elimination Diet**

The elimination diet should ideally comprise no ingredients that the pet has been exposed to. However, this is usually impossible. Since proteins are the most common offending allergen, the primary goal is to feed a protein and carbohydrate source that the pet has not been routinely exposed to. Pure carbohydrates are not of primary concern, except that most carbohydrate sources do have low levels of protein in them that may be allergenic. Even corn starch, which is commonly found in medication and other tablets, has a low level of protein.

My favorite diets are the commercial limited ingredient, hydrolyzed diets by Hills (ZD ultra), Purina (HA) and Royal Canin (HP or Anallergenic). None have been 100% effective though they have been the most effective of the commercial diets. I justify the
cost of these diets as a test, my plan is not to keep the dog on these diets forever. I also justify these diets by telling owner about the contamination that has been found in four different studies in "hypoallergenic" limited ingredient diets.[6-9] Infrequently I use unbalanced home made vegetarian diet of pumpkin and pinto beans. The elimination diet in a dog with no gi signs should go for 8 weeks or until the pruritus has markedly decreased without other drugs. If concurrent drugs such as glucocorticoids or Apoquel are used then they end usually by 6 weeks. If gi signs are present then evaluate at 4 weeks and if they have not improved the diet should be changed again.

**Challenge and Specific Provocation Testing**

True confirmation of AFR occurs when feeding the offending diet induces signs (challenge phase), which resolve on the elimination diet with no other changes in concurrent therapies. After signs have improved significantly or have resolved completely, the pet should be challenged. Different methods of challenging are used depending on the type of client. Feeding expensive hydrolyzed diets as the test diet often facilities getting challenges performed as clients often would prefer less expensive foods for long term use. If a food allergen is fed signs usually occur rapidly, within the first 2 or 3 days on the challenge. The sooner a client observes a sign of disease occurring and goes back on the elimination diet, the sooner the pet will respond. Fortunately, when they only get one to several meals of the offending diet the response is usually rapid again. The next step is to try to determine which ingredients are causing the allergy. This is particularly helpful for the long-term management, especially in multiple-pet households.


