THE Diagnostic Challenge in Small Animal Medicine
Craig E Griffin DVM, DACVD
www.animaldermclinic.co.nz
Co Mentor for Helen Orbell ACVD residency in conjunction with Massey University

Goals

1. Learn what Food Allergy (FA) or Adverse Food Reaction (AFR) does to itchy dogs
2. Understand about Environmental/Food Canine Atopic Dermatitis (EFCAD)
3. How do we make recognition of FA difficult
4. Tips to improve recognition and management of FA

Importance of Recognizing Food Induced Atopic Dermatitis

- Better response to therapy for AD
  - Food induced cases may require more prednisone or respond less to steroids and ciclosporin
  - May not respond as well to ASIT
  - May end up poorly controlled and more severe disease
  - May need steroids + ciclosporine +/- or azathioprine


May Cause Other Signs

Perianal fistula
Hot spots
Vasculitis
Urticaria
Perianal

Food hypersensitivity in 20 dogs with skin and gastrointestinal signs

80% >3BM/day
60% on challenge
65% mucus
55% tenesmus
20% blood
65% recurrence gi with challenge

Food hypersensitivity has been reported in 10 to 15 per cent of dogs with pruritic disease caused by food allergy (Scott and others 1995). Griffin (1995) has stated that pruritic dogs with an increased faecal frequency, which he suggests may be more than three bowel movements per day, are more likely to have food allergy as a cause of their pruritus.
Gastrointestinal Signs May Be Present

- Presence of gastrointestinal signs:
  - 22 AFR 68% had gi signs
  - 24 Non food 25% p=0.04

- Vomiting and diarrhea:
  - 65 FIAD 31%
  - 183 NFIAD 10% p = 0.05
  - 172 FIAD 27%
  - 571 NFIAD 10% p <0.001

Incidence depends on what signs you look for!


Atopic Dermatitis

- Is a genetically-predisposed inflammatory and pruritic allergic skin disease with characteristic clinical features

Atopic Dermatitis

- Associated most commonly with IgE to environmental or other allergens

- Newest Terminology:
  - Food responsive AD
  - Food induced AD (FIAD)
  - Food non-responsive AD
  - Non food induced AD NFIAD
  - Atopic like AD
  - AD without demonstrable IgE to allergens

Incidence Non Seasonal Pruritus, Not flea or scabies, When Trial Completed

<table>
<thead>
<tr>
<th>Year</th>
<th>Incidence %</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>15%</td>
<td>Kunkel and Horner</td>
</tr>
<tr>
<td>1994</td>
<td>18%</td>
<td>Denis and Paradis</td>
</tr>
<tr>
<td>1996</td>
<td>24%</td>
<td>Vosem</td>
</tr>
<tr>
<td>2001</td>
<td>76%</td>
<td>Lesure, Markwell et al</td>
</tr>
<tr>
<td>2002</td>
<td>31%</td>
<td>Chesney</td>
</tr>
<tr>
<td>2002</td>
<td>47%</td>
<td>Tapp, Griffin et al</td>
</tr>
<tr>
<td>2004</td>
<td>48%</td>
<td>Loeffler, Lloyd et al</td>
</tr>
<tr>
<td>2004</td>
<td>62%</td>
<td>Biourge et al</td>
</tr>
<tr>
<td>2005</td>
<td>52%</td>
<td>Jackson, Murphy</td>
</tr>
<tr>
<td>2006</td>
<td>40%</td>
<td>Loeffler et al</td>
</tr>
<tr>
<td>2006</td>
<td>17%</td>
<td>Tarapotelli et al</td>
</tr>
<tr>
<td>2008</td>
<td>39%</td>
<td>Picco, Zini et al</td>
</tr>
<tr>
<td>2010</td>
<td>23%</td>
<td>Favrot, Staffan et al</td>
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<tr>
<td>2010</td>
<td>49%</td>
<td>Proverbio et al</td>
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GI Signs

- How much do these signs relate to medications given to control pruritus and infections?
  - Another problem related to not fixing AD
- Make the dog uncomfortable in addition to the pruritus
- Do they impact response to oral medications?
Incidence of Food Reactions in CAD or Non Seasonal Pruritus

<table>
<thead>
<tr>
<th>Year</th>
<th>Food Reactions</th>
<th>Non Food Reactions</th>
<th>Authors</th>
</tr>
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<tbody>
<tr>
<td>2004</td>
<td>62%</td>
<td>44%</td>
<td>Biourge et al</td>
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<td>2004</td>
<td>48%</td>
<td>59%</td>
<td>Loeffler et al</td>
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<td>47%</td>
<td>Jackson, Murphy</td>
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<tr>
<td>2006*</td>
<td>40%</td>
<td>55%</td>
<td>Loeffler et al</td>
</tr>
<tr>
<td>2006</td>
<td>17%</td>
<td>?</td>
<td>Tarpataki et al</td>
</tr>
<tr>
<td>2008*</td>
<td>29% / 39%</td>
<td>14%</td>
<td>Picco, Zinni et al</td>
</tr>
<tr>
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<td>23%</td>
<td>?</td>
<td>Favrot, Steffan et al</td>
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<tr>
<td>2010</td>
<td>49%</td>
<td>19%</td>
<td>Proverbio et al</td>
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* when diet trial done after other causes of skin disease ruled out

Gastrointestinal Signs

<table>
<thead>
<tr>
<th>Clinical sign</th>
<th>All dogs (%)</th>
<th>Dogs with GI (%)</th>
<th>Concurrent AFR (%)</th>
<th>NF-AR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pruritus</td>
<td>53 (100)</td>
<td>9 (100)</td>
<td>15 (100)</td>
<td>24 (100)</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>46 (75)</td>
<td>7 (71)</td>
<td>7 (53)</td>
<td>19 (75)</td>
</tr>
<tr>
<td>Pyoderma</td>
<td>53 (53)</td>
<td>5 (51)</td>
<td>6 (54)</td>
<td>13 (51)</td>
</tr>
<tr>
<td>Atopic dermatitis</td>
<td>19 (79)</td>
<td>5 (51)</td>
<td>4 (51)</td>
<td>10 (79)</td>
</tr>
<tr>
<td>Gastrointestinal signs</td>
<td>28 (68)</td>
<td>6 (68)</td>
<td>9 (69)</td>
<td>6 (68)</td>
</tr>
</tbody>
</table>

If 10% (15%) of cases the diet did not work then 2 or 3 (4) would have been AFR so if those had GI signs then 3 or 4 would have GI signs.

Environmental and Food

Partial Food AD

- What is a partial response based on
  - PVAS
  - Pattern
  - Lesions
    - And who looked and how well were lesions looked for
  - Concurrent signs
    - GI
    - Respiratory (sneezing)

Difficulties in Recognizing EFCAD

- Looking for all or none responses
  - You the Veterinarian need to “look” with a well educated and trained client
- Failure to educate the client about what to watch for
  - Changes in level of pruritus
    - Regionally, locally versus overall pruritus level
  - GI signs as they are not always evident in the office

You Need To Recognize Changes

- Pattern of lesions
  - Owners may not ascertain a partial response when overall pruritus is still unacceptable??

\* AFR 63% had GI signs. Non food 25% p=0.04

16 dogs did not complete diet trial 1 responded not challenge
- 4 not eat diet, 2 cost, 1 euth 1d, 1 euth so ended within two weeks
- 8 not strict, and 1 not challenge was better
If 10% (15%) of cases the diet did not work then 2 or 3 (4) would have been AFR so if those had GI signs then 3 or 4 would have GI signs. If 10% OF cases the diet did not work then 2 or 3 (4) would have been AFR so if those had GI signs then 3 or 4 would have GI signs. If 21/29 GI found so 8 of 17 had GI signs 15% more AFR

\* 21/29 GI found so 8 of 17 had GI signs 15% more AFR

34 AFR & more all
Follow Up Examination

- All diet trials should end with an examination
  - Subtle signs may be missed
  - Represent other allergy
  - Other disease
  - Lead to recurrent microbial flares
  - History of pruritus, pattern and gastrointestinal signs
  - Could reveal partial responses

Key Pointed

- All elimination diet trials end with an examination followed by a challenge
  - Even when clients feel the diet has not helped
    - Make sure establish any changes from prior to diet to see if some flare which could indicate a partial response
  - Even when you think the diet did not help!!

Tips to Improve Practice

Which of the following is reported to cause the most food reactions in dogs?

1. Beef
2. Chicken
3. Corn
4. Pork
5. Preservatives

Data from 19 studies or case reports

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<th>% of reactions</th>
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<td>Beef</td>
<td>32%</td>
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<td>Dairy</td>
<td>18%</td>
</tr>
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<td>Chicken</td>
<td>15%</td>
</tr>
<tr>
<td>Wheat</td>
<td>13%</td>
</tr>
<tr>
<td>Chicken egg</td>
<td>7%</td>
</tr>
<tr>
<td>Soy</td>
<td>5%</td>
</tr>
<tr>
<td>Lamb</td>
<td>5%</td>
</tr>
<tr>
<td>Pork</td>
<td>4%</td>
</tr>
<tr>
<td>Fish</td>
<td>4%</td>
</tr>
<tr>
<td>Oatmeal</td>
<td>3%</td>
</tr>
<tr>
<td>Turkey</td>
<td>2%</td>
</tr>
<tr>
<td>Rice</td>
<td>2%</td>
</tr>
<tr>
<td>Duck</td>
<td>1%</td>
</tr>
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</table>

NO potato, sweet potato or oatmeal

365 total reactions
So not many have multiple?

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</tr>
<tr>
<td>Rice</td>
<td>2%</td>
</tr>
<tr>
<td>Duck</td>
<td>1%</td>
</tr>
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None done in a controlled or scientific manner

UPDATED 2013

Roudebush, Letter to editor Vet Derm 2013
How are challenges done?

- How many challenges will be recommended versus completed
- What ingredients are the cases challenged with
  - What the pet has been exposed to
  - If potato, sweet potato, oatmeal was never challenged you would not find any
- How the provocative exposure was done
  - Randomized order for ingredients

Consider this on Food Allergen Incidence

- Rice reactions
  - 2/33 dogs reacted to rice 6% ¹
  - 5 of 330 react so 2% ²
  - We do not know if all dogs challenged with Rice
  - What if only 15 dogs challenged with rice
  - Then 13% positive

A Lot Different Than 2 or 6%

- Carlotti, Remy et al. (1990) Vet Derm
- Roudebush, Letter to editor (2013) Vet Derm

Consider this on Food Allergen Incidence

- Fish reactions
  - 8 confirmed food allergic by home made diet ¹
  - All 8 were challenged with fish
  - 4(50%) reacted
  - If in ² only 10% challenged with fish
  - Then 12 of 53 would be 37% reacting
  - Still less than the 50% in ³

But Greater Than Beef

- Tapp, Griffin et al. 2002
- Roudebush, Letter to editor (2013) Vet Derm

Diet Contamination

- Multiple studies confirming contamination in most studied diets ¹-³
  - Generally parts per million or low levels or not reported just positive PCR
  - Challenge to show how often flare have not been published

Bone Contamination Avian 6/9 Fish 5/7 Mammal 4/6
Any contamination 10/12

Hydrolyzed Protein Diets Are Limited Ingredient Diets

My Favorite Diets for Diet Trials

Most Important Rule

• Nothing else is ingested but the diet!!
  – This needs to be explained in some detail with mention of examples that cause failures-
    • Giving medications, treats, vitamins, monthly heart worm or other treatments, ……
  • Nothing but what is allowed should enter the pets mouth?
    – It takes very little to cause reactions in some dogs.

Some Dogs Go To Great Lengths To Eat

All Labs
It's not just what you feed
It's not just the treats
It's what they ingest
Whether you realize it or not!

Hoover Hound
Seniors and Husbands
Child chasers
Feline Feces Finder

It Can Take Very Little To Flare!

It takes very little to cause reactions in some dogs!
Take 12 dogs allergic to soy
One flavored Interceptor tablet
• 10 increase clinical scores of skin and otic signs
  – peak flare of scores on day 2 (5 dogs) and 5 (5 dogs) post tablet,

Jackson et al. 2003

Client Education

• Can not overemphasize strictness
  – May require special changes in the home environment
  • Not loose outside of house
  • Inside house separation from children

Food Allergy in CAD

The Diagnostic and Therapeutic Challenge Of Small Animal Medicine

Owner Assessment of Pruritus and Gastrointestinal signs in apparently healthy dogs…¹

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>#</th>
<th>GI SIGN</th>
<th>Mean</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>0</td>
<td>Fecal Mucus</td>
<td>0.32</td>
<td>0</td>
</tr>
<tr>
<td>A few times/year</td>
<td>1</td>
<td>Borborygmi</td>
<td>0.82</td>
<td>1</td>
</tr>
<tr>
<td>A few times/month</td>
<td>2</td>
<td>Vomiting</td>
<td>0.49</td>
<td>0.1</td>
</tr>
<tr>
<td>A few times/week</td>
<td>3</td>
<td>Belching</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Daily</td>
<td>4</td>
<td>Flatulence</td>
<td>1.61</td>
<td>1</td>
</tr>
<tr>
<td>Multiple times/day</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Stetina et al, 2015 Vet Derm
Owner Assessment of Pruritus and Gastrointestinal signs in apparently healthy dogs…

<table>
<thead>
<tr>
<th>GI SIGN</th>
<th>Mean</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hematochezia</td>
<td>0.04</td>
<td>0</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>0.13</td>
<td>0</td>
</tr>
<tr>
<td>Black tarry stools</td>
<td>0.16</td>
<td>0</td>
</tr>
<tr>
<td>Tenesmus</td>
<td>0.19</td>
<td>0</td>
</tr>
<tr>
<td>Regurgitation</td>
<td>0.22</td>
<td>0.1</td>
</tr>
<tr>
<td>Coprophagia</td>
<td>0.24</td>
<td>0</td>
</tr>
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</table>

Frequency: Never

- Never
- A few times/year
- A few times/month
- Weekly
- Daily
- Multiple times/day

Minimum Diet Trial

- Elimination diet started
- Evaluate response of skin and GI signs; possible modify diet
- Eliminate or suspect food allergy diet challenge
- GI symptoms (red color) in his/her poop?
- On average, how many times does your dog have belly pain, growl or gurgle?
- On average, how many times do you hear your dog's stomach movement (stool, feces)?
- On average, how many times does your dog have no poop coming out?
- On average, how many times per day does your dog go poop (bowel movement) per day?
- On average, how many times your dog defecate (go poop) or squat for long periods of time?
- On average, how many times does your dog have blood in his/her poop?
- On average, how many times your dog has mucus in his/her poop?
- On average, how many times does your dog have a tarry color?
- On average, how many times does your dog have gas (or fart)?
- On average, how many times does your dog have diarrhea?
- On average, how many times does your dog have constipation?
- On average, how many times does your dog have hard motions?
- On average, how many times does your dog have loose motions?
- On average, how many times per day does your dog have coprophagia?
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Animal Dermatology Clinic NZ
www.animaldermclinic.co.nz