

LPGS TO SCC?

Funny how things happen sometimes. I was recently talking to a group of feline practitioners on the subject of chronic oral inflammatory disease (aka lymphocytic/plasmacytic gingivostomatitis and other aliases) when someone asked if I had ever seen this condition lead to malignant transformation and the development of oral squamous cell carcinoma. I answered that I could not remember having seen this happen. Not 48 hours later I saw this:



This cat had been a stray taken in by a kind soul some years ago. He had several problems at the time, including his mouth, which had severe ulcerative inflammation all around. With good professional care and vastly improved living conditions, he improved dramatically in many ways but the mouth never really got any better despite several attempts at medical management.

While whole-mouth extraction was recommended, the owner got the message (from a variety of sources, including the internet) that extraction would be considered a last resort. Therefore a more conservative treatment plan was maintained for three or more years. Finally, when the swelling in the left buccal pouch was detected, the cat was referred for extraction.

When I saw the patient, it was evident that he needed whole mouth extraction if there was any chance of offering him a future with a mouth free from pain and infection. Most teeth had one or more of dramatic gingival recession, periodontal bone loss and tooth resorption. However, the presence of the large mass in the left upper lip likely meant that he had no future to worry about. Therefore, rather than doing the extraction/wound closure surgery, I did core biopsies of the mass and sent the cat home on analgesics pending results of the biopsy.

The title of this piece gives away the punch line – and a real punch to the guts it is – *“poorly differentiated squamous cell carcinoma...looking even more dangerous than most”*. The mass’s size and location

made it impossible to remove it surgically with reasonable margins and so this was an inoperable, terminal cancer and a few days after receiving the histology report, the cat was euthanized.

No one can say for sure that the chronic inflammation of LPGS had anything to do with the development of SCC or not but it is known that chronically ulcerated and inflamed epithelium is fertile ground for the development of tumors. While there is no definite link, there is a theoretical one that gives us one more reason to be aggressive in treating LPGS.

I did a short piece on LPS (LPGS) a few years ago (<http://www.toothvet.ca/PDFfiles/LPS.pdf>) and it is worth another look now before reading further. Other articles on the Old CUSP Articles page at www.toothvet.ca will also add some perspective (the piece on antibiotic use and the piece on chronic ulcerative paradental stomatitis in dogs particularly).

In the years since writing the piece on LPGS not much has changed with respect to our understanding or management of LPGS but there are some points that I would like to emphasize and few others I would like to raise.

Diagnosis

There are no tests or specific signs that conclusively state that a cat has LPGS. Even the name LPGS is vague and non-specific. It stands for lymphocytic/plasmacytic gingivostomatitis. These are merely histologic descriptions of the effects of the disease. Any inflammation of the gingiva is gingivitis and with the other oral tissues involved it can be termed a stomatitis regardless of the cause. Any chronic inflammatory response, anywhere in the body, will result in the accumulation of lymphocytes and plasmacytes. So any time you see chronically inflamed oral tissues, you can call it LPGS regardless of the cause(s). This is one reason that I feel biopsying these tissues is a waste of time, effort and money. The pathologist will be able to tell you what you can already see with your eyes (chronic inflammation with variously ulceration and proliferation) but they will not be able to give you any idea as to the etiology. In fact, the pathologist I use (Dr. Brian Wilcock of Histovet Surgical Pathology in Guelph) adds the following comment to feline gingival biopsy reports:

The problem is that about 90% of feline gingival biopsies contain identical histologic lesions: epithelial hyperplasia alternating with ulceration, and an intense subepithelial band of plasma cells intermingled with smaller numbers of neutrophils. I see this lesion day after day in cases of stubborn, refractory stomatitis/gingivitis. I have no confidence

at all that this represents a single disease entity. Either there is one specific disease of the oral mucosa of cats that is remarkably prevalent, or (more likely) the oral mucosa of cats responds in the same histologic fashion regardless of the nature of the injury. On the basis of these biopsies, I cannot give you any specific insight into etiology, pathogenesis, or rational therapy.

As my previous paper on LPGS indicates, it may be worth testing for viral and bartonella infections but a few recent papers looked at the incidence of positive tests for Feleuk, FIV, calici virus, herpes virus and *Bartonella* spp in cats with stomatitis and cats with 'healthy' mouths. None of these surveys were able to find any significant difference in infection incidence between the two groups of cats. In other words, no statistical association with these infectious agents has been demonstrated in LPGS-positive cats compared to LPGS-negative cats.

One criticism of some of the papers was that the selection criteria were way too vague and herein lies one of the big challenges. How does one decide if the cat has 'garden variety' gingivitis, periodontal disease and tooth resorption versus LPGS? When looking at a large population of cats, how does one decide whether a particular cat with oral disease is an LPGS-cat or just a cat with poor oral hygiene and periodontal health? Since there are no specific and consistent selection/exclusion criteria used across the various studies, the results are thrown into some doubt. The point remains - no one has been able to demonstrate any cause/effect connection between any infectious agent and the development/persistence of LPGS.

There may yet be some statistical associations, but I have found that 100% of the cats I see with this problem have four legs. Therefore, I could sarcastically propose that quadrupedia has such a strong statistical association with LPGS that possibly amputating one leg might be of benefit. This ridiculous example obviously ignores the fact that almost 100% of cats without LPGS also have four legs.

At present, the best way I know of to decide if a cat has LPGS is to qualitatively and quantitatively evaluate the degree of pathology, then perform the appropriate surgical therapy and evaluate the patient's response. Much of this will still be subjective and there will be patients in the gray zone.

Any cat with gingivitis or oral inflammation needs a COHAT (comprehensive Oral Health Assessment and Treatment) to thoroughly evaluate the pathology and treat it surgically. The assessment must include probing and exploration of all teeth and surrounding

tissues with charting of all findings and whole-mouth intra-oral dental radiographs. Any teeth with tooth resorption (the new, official name for neck lesions, feline odontoclastic resorptive lesions...) and/or advanced periodontal disease and/or crown fractures then need to be extracted. Remaining teeth are thoroughly cleaned above and below the gum line to remove all plaque and mineral deposits. Post-operative medications should include analgesics if there have been extractions, but I rarely use any antibiotics, figuring that surgery has removed the source of the infection and antibiotics will only affect the sensitive organisms, leaving the resistant ones with less competition.

If the cat had uncomplicated periodontal disease and tooth resorption, its mouth should be dramatically improved at the two-week recheck at which point some form of daily plaque control should be instituted. This is best done with daily tooth brushing but can also be aided by feeding a plaque-retardant diet such as Feline t/d™. The improvement in the oral condition should reasonably be expected to last for many months, even years. Annual COHATs to look for new problems and perform appropriate maintenance therapy are indicated to keep ahead of the problems (be proactive rather than reactive).

If following the first COHAT, the oral inflammation either does not resolve or recurs with a vengeance within weeks, then we probably have a cat with LPGS and we need to completely change our focus and approach.

What We Don't Know

At the Veterinary Dental Forum in 2006, Dr. Jamie Anderson gave a presentation entitled "*Etiopathogenesis and Treatment of Feline Gingivostomatitis; More Questions Than Answers*". We all went looking for answers but Jamie spent the hour listing off close to one hundred questions for which we do not yet have any answers. Obviously this is a very complex and poorly understood condition or group of conditions.

Among the things we do not know is what causes LPGS. It is possible that there are many different risk factors and that cats that accumulate enough of them in any combination will convert to clinical cases.

Treatment of LPGS

Since we do not know the cause(s) of LPGS, our efforts to treat it are severely hampered. A great many things have been tried and most of them have offered some degree of relief to some cats in the short term but there has yet to be any medical or conservative approach that gives reliable and lasting relief to these

patients. Worse, most of the medical approaches would need to be life-long and can lead to serious side-effects. Cats given depomedrol injections over the long-term will not only become refractory to treatment but many will also become diabetic.

Several studies over the years (including Philippe Hennes in the Journal of Veterinary Dentistry, March 1997 [vol 14 #1] *Chronic Gingivo-Stomatitis in Cats: Long-Term Follow-Up of 30 Cases Treated by Dental Extractions* and Colin Harvey at the Veterinary Dental Forum in 2007 *Results Following Treatment by Extraction of Teeth in Cats with Stomatitis*) have shown that the most effective means of offering these poor cats meaningful and lasting relief is to extract ALL teeth and root remnants. That means every single tooth and tiny bit of retained root must go and be confirmed radiographically. Even this is not a guaranteed cure but it is the treatment with the best chance of success and even if it does not result in 100% resolution, it makes the condition vastly easier to manage in the long term.

Many people, (veterinarians and owners alike) are hesitant about whole-mouth extraction. Some are worried how their cat will eat with no teeth. Some are concerned about the magnitude of the surgery. Some are worried about the cosmetics of having a toothless mouth. Some just get the willies thinking about it for no identifiable reason – just an aversion to the concept. What we have to understand and then help the owners to understand is that the domestic pet cat (and this goes for dog's too) does NOT need any teeth to enjoy a long and happy life. They do not need to hunt and kill, because the food is already dead and in the bowl. They do not need to rend raw meat from the carcass as it is already chopped up and ready to swallow. They do not need to defend their territory or protect themselves from predators as they have walls, a roof and owners to look after their security. What they do need and deserve is a mouth free from pain and infection. So my answer is that cats (and dogs) do vastly better with no teeth than they do with bad teeth.

Usually I figure testimonials are not worth the ink but this photo came with a typical letter of gratitude that went like this:



“...On January 2 you removed all of our cat Eddie's teeth. At the time it was a difficult decision not knowing how he would cope afterwards. We would like to inform you that he is acting like he used to...an absolute nut! Obviously his condition was affecting his behaviour and personality greatly. As of today (March 6) his gums are a healthy pink, not an inflamed red and he will actually let you look in his mouth now! Once again we wanted to thank you all. Not only did you make us feel very comfortable with the decision, but we have a changed cat!”

Not all cases respond so quickly. Often, the longer the condition has been going on and the further down the throat the inflammation extends, the longer it may take to resolve. These are the cats that may need some medical management *after* all the teeth have been removed.

A very simplified algorithm for managing oral inflammation in cats.

IF Detectable gingival inflammation, halitosis or other signs of periodontal disease or resorptive lesions...

THEN COHAT

IF good and lasting response to COHAT...

THEN institute daily plaque control measures and plan on annual COHATs to keep ahead of problems

IF poor or transient response to COHAT...

THEN IF inflammation just around premolars and molars AND the canines, incisors and surrounding tissues are clinically and radiographically healthy AND the owners are committed to preserving the canines and incisors AND the owners are willing to accept the possibility that the canines and incisors may be lost eventually

anyway and will need daily plaque control and at least annual professional care...

THEN consider just removing the premolars and molars, smoothing the bone and suturing the wounds with absorbable monofilament.

ELSE IF the inflammation extends around the canines and incisors OR there is even one tooth resorption affecting any canine or incisor OR the inflammation extends into the pharynx or sublingual areas OR the owners are at the end of their ropes and want the best chance of resolution OR the owners are not able to commit to home care and follow up of any retained teeth...

THEN remove every single tooth and root remnant, smooth the bone, suture the wounds with absorbable monofilament AND consider surgical resection of excess inflamed soft tissue from sublingual and pharyngeal areas.

IF caudal extractions were done (premolars and molars) yet inflammation persists anywhere in the mouth...

THEN remove all remaining teeth and radiograph looking for retained roots

IF whole mouth extractions were done AND confirmed radiographically AND inflammation persists...

NOW you can consider medical management for which there are a great many options.

Following extraction of the teeth the wounds need to be sutured closed and this will result in suture material being in the mouth during healing. This foreign material will accumulate plaque and so expect there to be some inflammation at least until all the suture material is gone. After that it may still take some weeks for the inflammation to subside completely. Some patients (the ones who have suffered for a long time prior to extractions particularly) may continue to have some oral inflammation but will still be much improved clinically (eating, drinking, grooming better, gaining weight, being more active). For some cats, 90% improvement is enough as the medications required to clear up that last little bit of inflammation would cause more harm than good.

Just a word of caution about cyclosporin for this (or any other) condition. Eric Davis did a presentation at the Veterinary Dental Forum in 2007 which reminded us that cyclosporin is intensely immunosuppressive. Its primary use in humans was to prevent transplant rejection. In human medicine, it has largely been replaced by newer, better drugs so they are looking for a new market - us. Before giving a cat cyclosporin, be sure to run a toxoplasmosis titer and check its viral status very carefully. Eric described a few cases in dogs that developed fulminate (and in some cases fatal) fungal infections while on cyclosporin. This is not a benign drug and not one to be given without serious consideration of the alternatives and potential consequences.

Other medical options include hypoallergenic diets, hypoallergenic bowls, interferon, lactoferrin, meloxicam, piroxicam, coenzyme Q10. Each of these seem to help some cats but it can take a long time before you can determine if the treatment is helping or not. For example, Ben Colmery DiplAVDC, of Michigan, says that when he prescribes interferon, he gives 60IU daily for one month, then takes a month off and repeats the cycle for one year before deciding if the interferon is helping or not.

- We do not know the cause(s) of LPGS
- We do not have specific diagnostic criteria for LPGS
- As long as affected cats have any dental tissues in their head, they will not have meaningful or lasting relief with medical management
- The earlier in the course of the condition whole-mouth extraction is performed, the better the long-term prognosis
- Whole-mouth extraction is vastly preferable to a life of oral pain and constant medication (and often less expensive as well).