Feline Stomatitis Gingivitis Complex – New approaches to an old disease II
We can actually get most of them better!

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In many cases managing the client’s expectations is as important as managing the clinical syndrome of FCGS. When formulating a treatment plan it is necessary to establish what the client’s demands and budget are as these will significantly influence the approach to the case. It is also imperative to be realistic about the prognosis and communicate this clearly at an early stage to the client.

Many treatment options have been proposed for FCGS but there is no ‘quick fix’ for this condition and only a small proportion of cases will have a lasting response to routine prophylaxis. By conducting a thorough diagnostic work up, formulating a clear progressive treatment plan and involving the client at an early stage in the process, the disillusion commonly associated with ‘failed treatment’ of FCGS can be avoided.

There are three principle objectives in managing FCGS:

1. Treat any existing dental disease
2. Control plaque
3. Control inflammation

Any treatment plan must involve a systematic approach to removing the factors maintaining and contributing to the lesions. As periodontal tartar and plaque represent probably the greatest sources of oral antigens their control and removal must form the cornerstone of any treatment strategy as well as treating other concurrent oral/dental problems such as periodontitis, FORL etc.

SCALE AND POLISH

Good technique and the correct equipment are both essential elements in the dental work involved in treating FCGS. Diligent professional cleaning and polishing, paying particular attention to the subgingival tissues is essential. Aggressive homecare using Chlorhexidine Gluconate based products (e.g. Hexarinse or Oral Hygiene Rinse, Virbac) should be regarded as an integral part of the veterinary procedure\textsuperscript{1,2}. In the absence of effective homecare it is difficult to fully assess the cause of failure to respond to routine prophylaxis.

DENTAL EXTRACTIONS

Of all the different approaches to treating this condition, radical extractions primarily of the molar and premolar teeth have the best reported success rate\textsuperscript{3}. In this study 60% of cats were clinically cured and a further 20% showed significant improvement with no ongoing treatment other than plaque control. Whilst these results provide a
convincing argument for adopting this approach, elective radical extractions should not be undertaken without due consideration to the risks involved. Probably the single most influential factor in determining the success of radical extractions is surgical technique. Ideally an open technique should be employed which involves:

- raising a muco-periostial flap to expose the alveolar bone
- using a high speed bur to remove buccal bone
- sectioning of tooth into single root segments
- loosen root with appropriately sized luxator
- removal of each root segment
- remodelling of the alveolar crest
- suture flap with 1 metric monofilament absorbable suture

Paradoxically once a clinician is experienced in the open extraction technique it will be quicker, cause less overall trauma to the oral tissues and result in a more rapid recovery than a closed technique.

Root fragments and spicules of alveolar bone can provide a focus for inflammation and plaque deposition preventing a case from resolving. To help prevent this, the alveolar crest should be remodelled after extraction and care should be taken to avoid fracturing tooth roots. Prior to extraction full mouth radiographs should be taken and following the procedure, further radiographs used to confirm that all intended teeth were successfully extracted. If any tooth roots do remain they should be removed surgically (potentially at a later date) and not atomised using a high speed bur as this is ineffective and can cause extensive damage to the nerves and blood vessels in the mandibular canal.

Extractions can either be done in stages, initially removing all teeth with any clinical or radiographic evidence of dental disease before elective extractions at a later date if necessary, or in a single procedure. In deciding which approach to adopt, consideration should be given to the time and concentration necessary for a single procedure.

With the exception of radiographically confirmed type 2 FORLs (where ankylosis of the root has occurred), crown amputation is contraindicated in FCGS. Where it is indicated the exposed bones should be thoroughly flushed with normal saline and smoothed with a bone rasp or high speed bur prior to surgical closure of the mucosal flaps with monofilament dissolvable suture material.

**MEDICAL MANAGEMENT**

**ANTIBIOTICS**

Antibiotics should only be used strategically and integrated with other treatments. The role of pulse treatment is of questionable value. The selection of the antibiotic should be based on spectrum of activity (gram positive aerobes and gram negative anaerobes in particular) and tissue distribution (good concentrations in bone and soft tissue) and
used for up to 4-6 weeks around the time of extractions. The drugs and dose rates of choice are:

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose rate</th>
<th>Freq.</th>
<th>Example of Brand and Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clindamycin</td>
<td>11mg/kg</td>
<td>sid</td>
<td>Antirobe, Pfizer</td>
</tr>
<tr>
<td>Metronidazole</td>
<td>10mg/kg</td>
<td>sid</td>
<td></td>
</tr>
<tr>
<td>Spiramycin/Metronidazole</td>
<td>One Stomorgyl2 per 2kg sid</td>
<td>Stomorgyl, Merial</td>
<td></td>
</tr>
<tr>
<td>Amoxycillin/Clavulanate</td>
<td>12.5 mg/kg bid</td>
<td>Synulox</td>
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**CORTICOSTEROIDS**

Corticosteroids are employed for their anti-inflammatory properties as well as possibly their immunomodulatory effects. Their use is highly controversial especially in FIV, FeLV or FCV positive cats. Some authors regard their use as totally contraindicated; however, a pragmatic approach to their use needs to be adopted in general practice. One option is to use them only as a last resort where all else has failed but there are circumstances that will dictate their use at an earlier stage such as budgetary constraints. Corticosteroid therapy may provide short-term benefits but it only addresses the clinical signs of inflammation, not the underlying cause and frequently cats become refractory to treatment or in the long term, develop even more severe lesions.

**NSAIDs**

This is a painful condition so non-steroidal anti-inflammatory drugs provide the dual benefit of anti-inflammatory and analgesic properties. Meloxicam (Metacam 0.5mg/ml Oral Suspension for Cats, Boehringer Ingelheim Ltd) initially at 0.1mg/kg for one dose then 0.05mg/kg sid with food is the drug of choice as it is now authorised for oral use in cats. One precaution before using this drug would be to check biochemistry parameters especially renal function due to risk of toxicity.

**CYCLOSPORINE**

Cyclosporine has been extensively used but to date there have been no published reports. It mainly works by blocking T Helper cells but other possible activities include suppression of T-suppressor cells and inhibition of the production of various pro-inflammatory cytokines. Effects may take 4-6 weeks to manifest. Cyclosporine carries a relatively high risk of toxicity in the cat and hepatic dysfunction, renal dysfunction and anaemia are all recognised.

**INTERFERON**

Interferons are cytokines which form part of the immune system’s immediate non-specific defence mechanism and are produced in response to viral or bacterial DNA/RNA. It has been established that they have three main properties.
1. **Antiviral** – Induction of production of potent anti-viral enzymes
2. **Cell Growth Modulation** – Inhibition of Mitosis
3. **Immunomodulation** – Enhance activity of Natural Killer cells, neutrophils and lymphocytes

They are divided into two classes, Type I (α, β and ω) and Type II (γ), based on their properties and cell receptor type. Type I interferons have received the most amount of interest for the treatment of FCGS due to their broad spectrum of activities and the introduction of a recombinant Feline Interferon-ω (Virbagen Omega, Virbac) authorised for the treatment of canine enteric parvovirus and symptomatic FeLV/FIV infection. Various protocols have been suggested, utilising different routes of administration and published case reports and studies are beginning to appear in the literature\(^{(8,9)}\).

**Subcutaneous\(^{(8,9)}\)** – Southerden and Gorrel (2007) published a report of a case that had failed to respond to elective extraction that was successfully treated with a regime consisting of 1 MU/kg SQ eod for 5 injections followed by 10,000 iu per os. Another study conducted at Glasgow Vet School (to be submitted for publication) adopted a different regime involving 1 MU/kg SQ eod for 5 injection progressing to 1 MU/kg SQ twice weekly then weekly provided the cat is doing well. This protocol also involved regular monitoring of FCV shedding and injections were continued until shedding ceased.

**Intralesional\(^{(9)}\)** – this approach more closely reflects the natural production of interferons as highest concentrations are present in damaged tissues with some distribution systemically. The mouth is visually divided into 6 regions – 4 dental arcade quadrants and the left and right lateral glosso-palatine fold and up to 1 MU injected into each affected region. Small volumes should be injected throughout ulcerated/hyperplastic lesions and along margin of healthy and diseased tissue. To make the volume of injection more manageable dilute 0.1ml of a 10MU vial (1MU) with 0.1ml sterile saline (→ 1MU in 0.2ml). Local injections have been repeated at various intervals (every 2-3 wks on up to 5 occasions) or more recently on the basis of clinical response and injections only repeated if required. At one referral clinic this latter approach has been successful in 5 out of 6 cases (personal communication), 4 cases resolving after a single set of injections and one case after a second set of injections, however it may take up to 12 weeks for the benefit to manifest.

**Low dose oral** – There have been anecdotal reports of Interferon being administered orally providing some improvement in quality of life for affected cats in the absence of dentistry. A recent study conducted in France (due for publication) in a group of FCV positive cats that have failed to respond to elective extractions demonstrated that oral interferon may be of benefit in these cases.

**OTHER IMMUNOMODULATORS**

Other immunomodulatory agents that have been used in the treatment of FCGS include Thalidomide and Lactoferrin\(^{(10)}\), Gold Salts\(^{(11,12)}\), recombinant Human
Interferon Alpha and Essential Fatty Acid supplements. To date there is no strong evidence to support these agents and further research is needed.

4 different treatments for FCGS were compared in two studies\(^{11,12}\):

- Twice daily use of oral hygiene products (Chlorhexidine or glucose oxidase/lactoperoxidase based)
- 1 mg/kg Sodium aurothiomalate once weekly (Myocrisin, Rhone-Poulenc Rorer)
- 1 mg/kg methylprednisolone sid for 6 weeks tapering (Madrone-V, Pfizer)
- 12 mg/kg metronidazole + 23 mg/kg spiramycin sid every alternate week (Stomorgyl, Merial)

These studies demonstrated no significant differences between the groups.

**DIET**

Recent research in North America\(^{13}\) has shown that changing the cat onto a hydrolysed protein type diet (e.g. Hill’s z/d) can be of benefit in reducing the antigenic stimulus from this source. Indications are that it can take at least 6-8 weeks before any improvement is observed following this change. An alternative approach utilising a novel protein source diet has also been suggested but these need to be changed to a different novel protein source diet on a 6-8 week basis until resolution is achieved.

**APPROACH TO MANAGING CASES**

**First Presentation** – Depending on the severity of the case, it is advisable to adopt a fairly conservative approach when first presented with a case of oral inflammation in the cat:

- Clinical examination
- Thorough Dental scale and polish
- Extract diseased teeth
- Complete Dental Chart
- Medical management – including homecare and perioperative antibiotics
- Also consider: Blood work, Intra-oral radiographs and biopsy

**Cases Unresponsive to Treatment**

- Dental scale and polish
- Intra-oral radiographs
- Extraction of premolars and molars
- Medical treatment

**Cases Still Unresponsive to Premolar and Molar Extraction**

- Intra-oral radiographs
- Extract canines
- Re-biopsy
- Medical treatment
REFERENCES


