Avian gamma interferon as an adjunctive therapy in managing circovirus disease in psittacine species – work in progress.

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Psittacine circovirus is a devastating disease in both wild and pet psittacine species. In some species, e.g. Rainbow Lorikeets (*Trichoglossus haematodus*), affected birds may show loss of reminges and retrices after exposure to the virus but, without treatment, many birds will self cure and in subsequent moults, they may regrow feathers and appear normal. Most of these lorikeets remain positive on PCR testing for circovirus and can be infectious to other birds. In cockatoos, on the other hand, the disease tends to involve both feathers and beak and birds that show clinical signs of the disease rarely self-cure. The disease tends to be progressive with subsequent moults.

No effective cure for the virus has been reported but in one clinical report circovirus-affected African Grey Parrots treated with avian interferon showed improvement, based on feather regrowth, leukocyte regeneration and change from positive to negative PCR testing for psittacine circovirus . In this same study circovirus-affected African Grey Parrots did not improve when treated with feline interferon.[1]

This preliminary trial was to determine:

1. If there were any adverse reactions associated with the use of avian interferon in psittacine species seen at our clinic.
2. Whether any psittacine birds treated with avian interferon would stop shedding virus based on PCR blood test results.
3. Whether circo-virus affected psittacine birds treated with avian interferon would show clinical improvement.

There was no withholding of other therapies in the trial as the intent was to determine if avian interferon showed any promise as an adjunctive therapy before considering undertaking a larger scale trial.

Method

The criteria for inclusion in the study were that the patient were:

1. a psittacine species, other than a lorikeet,
2. that it showed positive on an initial PCR test for circovirus on blood or feather sample and
3. That it showed positive for circovirus on subsequent HI/HA testing from blood taken from a sterile jugular venipuncture and blood feather sample.

Most of the birds included in the study were patients at Highbury Veterinary Clinic (Victoria, Australia)

- Three were birds coming in for routine well bird examination that showed no clinical evidence of the disease.
- The remaining eight birds showed clinical signs of circovirus. These included four Sulphur crested cockatoos (*Cacatua galerita*), two Eclectus Parrots (*Electus roratus*), a cross Little Corella x Galah (*Cacatua pastinator* x *Eolophus rosecapillus* and a Peachfaced Lovebird (*Agapornis rosecollis*)

Birds included in the study were:

- Given a complete physical examination by the author
- Injected with 0.02 ml of a 0.5mg/l solution of avian interferon intramuscularly into alternative sites in the pectoral muscles three times weekly for 16 weeks; by the owner.
- In general, depending on owner compliance, fed on a diet including fresh green vegetables, an organic formulated food (Harrisons) and some mixed parrot seed. In general, depending on owner compliance, given flax seed oil and immunostimulants including beta glucan, vitamins and minerals.

At the end of the course of injections, the physical exam and testing for circovirus using PCR/HI/HA was repeated.

Results

None of the birds included in the trial had adverse reactions associated with the administration of the avian interferon. Injections were generally not painful and owner compliance was generally good.

None of the birds showing clinical signs of circoviral disease changed from positive to negative on blood or feather PCR or HA results or showed any rise in serum antibodies against circovirus based on HI results. Two Patients that had not shown any clinical signs of circovirus but were positive on initial PCR testing for circovirus tested negative at the end of the study.

Owners of three of the eight birds showing clinical signs felt that their birds had shown clinical improvement and were keen to continue with the course of injections at the end of the preliminary study. In my opinion, based on cases above the use of avian interferon, maybe beneficial in the treatment of Psittacine circoviral disease and needs further evaluation.

Discussion

While avian interferon appears to a safe therapy at this dose rate, even in conjunction with supportive complementary therapies, it did not resolve any clinical cases. There may have been improvement in three out of the eight cases, but this may have been attributable to the supportive therapy, or owner optimism, rather than any effect attributable to the avian interferon. Time of treatment in relation to moult cycle is likely to be important as feathers are not likely to show improvement until new feathers are moulted. The change in PCR results in two birds not showing signs of the disease may have occurred without treatment or may have been due to lab error in the initial testing. However, it is potentially promising and warrants further investigation.

This preliminary study did not replicate the positive results seen by Stanford in using avian interferon in the treatment of circovirus-affected African Grey Parrots. The reason may have been the different species treated or that the cases seen here were more advanced or changes will not be seen until the next moult. However, there is a place for a therapy that slows progression of circovirus disease, even if it does not resolve the disease. Catching the disease early in its course, using a higher dose rate of the avian interferon than used here or using it at more frequent intervals are changes in protocol to be considered. Advice from the group would be appreciated.

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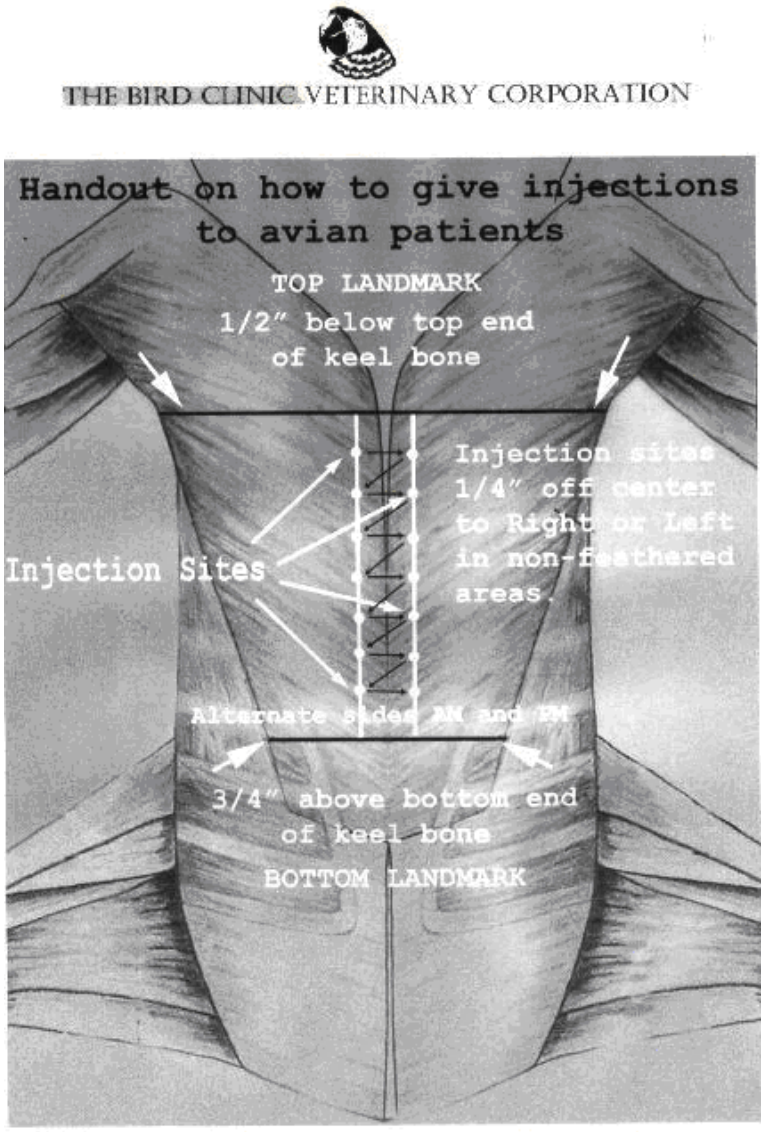
Reference

Stanford M. Interferon Treatment of Circovirus infection in Grey Parrots. F10 bicare website (http://www.f10biocare.co.uk/articles1.html) (07/2006)



A copy of the handout given to clients while explaining and demonstrating injection technique.