

Feline Babesiosis

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Causative Agent

In general..

- ❖ Different small & large *Babesia* species
- ❖ Various feline hosts

Often no clinical disease

Babesia felis (small)

- ❖ 1929 – Wild Cat in Sudan
- ❖ 1937 – Domestic cat of RSA
- ❖ Different species?
- ❖ 2001 – *Babesia leo* in lions
- ❖ 2010 – *Babesia lengau* in cheetahs

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Large piroplasms:

- ❖ 1967 - *Babesia herpailuri* in jaguar
- ❖ 1972 - *Babesia pantherae* in leopard
- ❖ 1980 – Unnamed in domestic cat

- ❖ 2004 – *Babesia canis* subsp *presentii*
- ❖ Local?
- ❖ PCR analysis on “large” babesia samples:
 - *B. felis* – commonly seen
 - *B. lengau*
 - *B. microti* (zoonosis)
 - *B. divergens* (zoonosis)
 - *B. odocoilei*
- ❖ More research needed!

Prevalence study of *B felis* and *B leo* in various wild and domestic felids¹:

- ❖ Parasites occur not only in species from which they were described, but also in other felid species
- ❖ Various mixed infections
- ❖ *Babesia microti* in various species
- ❖ *Babesia rossi* in 1 lion
- ❖ Only 54% of 212 reacted

1. A.Bosman, Dept Vet Tropical Diseases, University of Pretoria, 2010

Epidemiology

- ❖ Sporadic reports from other countries
- ❖ Regular occurrence in South Africa
- ❖ Endemic & non-endemic areas
- ❖ Vector?

Signalment

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- ❖ Regular occurrence in South Africa
- ❖ Endemic & non-endemic areas
- ❖ Vector?

Clinical Signs

- ❖ Anorexia
- ❖ Listlessness / depression
- ❖ Anaemia
- ❖ Icterus, weight loss, weakness
- ❖ No pyrexia
- ❖ Chronic course – can be fatal

Diagnosis

- ❖ Parasites on stained, thin blood smears
- ❖ Various shapes
- ❖ Variable parasitaemias
- ❖ Central and peripheral parasitaemias correlate

Haematology

- ❖ Macrocytic, hypochromic anaemia
- ❖ Regeneration evident
- ❖ Negative correlation between anaemia and parasitaemia
- ❖ IMHA
- ❖ No characteristic changes in total or differential leukocyte counts

- ❖ Abnormal leukocyte counts often reflect concurrent diseases
- ❖ Thrombocyte counts variable, thrombocytopenia NOT consistent

Clinical Pathology

- ❖ ↑↑ ALT – hepatocellular damage
- ❖ ↑↑ total bilirubin
- ❖ ALP and GGT mostly normal
- ❖ Clinical icterus only with high ALT values

Chemical Pathology

- ❖ Urea & creatinine - mostly normal
- ❖ Variety of electrolyte disturbances
- ❖ Albumin & globulin – N or ↑
- ❖ Protein electrophoresis polyclonal (α , β and γ globulins)

Concurrent Infections

- ❖ Pyrexia cats
- ❖ Cats with recurrent infections
- ❖ Chronic carrier adult cats that become symptomatic
- ❖ Cats who don't respond adequately to treatment

Treatment

- ❖ Primaquine phosphate (Primaquin, Kyron)
 - 0.5mg tablet
 - 5mg/ml IM inj, 10ml vial
- ❖ Dose: 0.5mg/kg PO or IM, thus 1 tablet/kg PO!

- ❖ Dose 1 to 3 times, at 72 hour intervals
- ❖ Follow-up with 0.5mg/kg once weekly for 3 weeks
- ❖ Recrudescence of parasitaemia after 2-3 weeks – repeat dose of 0.5mg/kg Primaquin
- ❖ Doses of 1mg/kg or higher can be fatal
- ❖ Primaquin has a good curative effect with reduced parasitaemia & ↑ haematocrit
BUT Primaquin does NOT sterilise the infection
- ❖ Chronic carrier state can persist for years after Primaquin treatment
- ❖ Aims: *clinical cure,
 - *resolution of anaemia &
 - *reduction of parasitaemia, NOT for complete clearance
- ❖ Regular monitoring essential

Doxycycline added - 10mg/kg OID x 21 days

- ❖ Effective against *Mycoplasma haemofelis*
- ❖ May be effective against *Babesia felis*
- ❖ Broad antibacterial spectrum

Other antibabesial drugs have limited success

- Improved clinical signs or
- Reduced parasitaemia
- ❖ Effects are short-lived and extremely variable
- ❖ Use of these drugs is not recommended

Not recommended for treatment:

Rifampicin, Trimethoprim-sulphas, Buparvaquone, Enrofloxacin, Danofloxacin, Diminazene, Imidocarb, Oxytetracycline, Phenamidine, Euflavine, Chloroquine

Atovaquone & azithromycin:

- ❖ Effective against *B.microti* & *B.divergens* (Hu)
- ❖ Effective against *B.gibsoni* (dogs)
- ❖ Unknown efficacy against *B.felis*
- ❖ Treatment for *Cytauxzoon felis*:
 - Atovaquone: 15mg/kg PO TID (10 days) “Wellvone”
 - Azithromycin: 10mg/kg PO OID (10 days) “Zithromax”

Supportive treatment

- ❖ Blood transfusion
- ❖ Nutritional support
- ❖ IV fluids and electrolytes
- ❖ Corticosteroids
- ❖ Rest
- ❖ Treat concurrent diseases

Blood Types in Cats

- ❖ Type A, Type B, (Type AB)
- ❖ Type A most common
- ❖ All cats have naturally-occurring antibodies
- ❖ Strong anti-A antibodies in type B cats
- ❖ Frequency differs between breeds and geographical areas

SEE CHART AT END OF NOTES

Blood Transfusions

- ❖ Type B cat receiving Type A blood – life-threatening acute haemolytic reaction

- ❖ Bradycardia, hypotension, vomiting, convulsions, haemolysis, icterus
- ❖ Type A cat receiving Type B blood – shortened survival of transfused cells
- ❖ Transfusion reactions independent of amount of blood given, thus administration of a small test dose of blood NOT an acceptable procedure for compatibility testing
- ❖ Start slowly, then 10ml/kg/hr
- ❖ Complete within 4 hours
- ❖ Volume of blood (ml) = desired PCV increase (%) x BW (kg) x 2
- ❖ Aim for PCV of 20%
- ❖ Lifespan of transfused AB-matched RBC is approximately 70 days

Blood typing

- ❖ Recipient and donor
- ❖ Anti-A antiserum for type A and
- ❖ *Tricutum vulgaris* lectin for Type B antigen
- ❖ In-house test

Crossmatching

- ❖ Indicates compatibility between recipient and donor
- ❖ Major – tests for antibodies in recipient plasma against donor RBC
- ❖ Minor – tests for antibodies in donor plasma against recipient RBC
- ❖ Major crossmatch incompatibility predicts life-threatening acute haemolytic reaction

Blood donors

- ❖ Shorthaired cats
- ❖ Large (>5kg), lean
- ❖ Young

- ❖ Healthy
- ❖ Good temperament
- ❖ 10-12 ml/kg BW

Nutritional support

- ❖ Prolonged anorexia
- ❖ Foods should contain high protein and fat, with essential nutrients
- ❖ Energy requirements: 70-90 kcal/kg BW/ day
- ❖ Ensure adequate food intake
- ❖ If inadequate, consider tube feeding

Prognosis of Feline Babesiosis

- ❖ Disease can be fatal
- ❖ Successful management depends on
 - Early and correct diagnosis
 - Effective therapy
 - Management of concurrent diseases
 - Continuous monitoring of cases
 - Client education and compliance.