# Immune Mediated Thrombocytopaenia - by Mike Coleman

Immune-mediated platelet destruction is a common platelet disorder. Primary immune-mediated thrombocytopaenia (IMT) occurs when antibodies are directed against normal platelet antigens. The cause of this is unknown and primary IMT is a diagnosis by exclusion of underlying diseases. Secondary IMT occurs in association with other disorders e.g. neoplasia, infection and drug therapies. IMT may also be one component of systemic lupus erythematosus.

## Clinical Signs

IMT can occur in dogs of any age and breed. Some breed predispositions do exist (e.g. Cocker Spaniels, Scottish Terriers, Old English Sheepdogs and Poodles) and an underlying genetic cause is strongly suspected in these breeds. Female dogs are approximately twice as likely to develop IMT as male dogs. Typical clinical signs include petechiae of skin and mucous membranes, ecchymoses, epistaxis, bleeding of the sclera, hyphema, haematemesis, haematochezia, haematuria, pale mucous membranes and lethargy. If spontaneous bleeding is going to occur it usually happens when the platelet count is less than 50,000/uL. Dogs can have very low counts without signs of bleeding however.

## Diagnosis

There are three general mechanisms that cause thrombocytopaenia - inadequate production, excess use or sequestration and destruction. A full history, physical examination and diagnostic workup is necessary to distinguish these, as well as ruling out secondary causes of IMT. The diagnostic workup includes a complete blood count, serum biochemistry profile, urinalysis, coagulation panel, thoracic radiographs and abdominal ultrasound. Bone marrow aspiration may be necessary to diagnose a production defect. A number of tests to detect antibodies against platelets have been developed. The most useful detect antibodies by flow cytometry or ELISA. These have good sensitivity, but are non-specific. They are not able to differentiate between primary and secondary IMT and false negative results could occur in animals already on steroid therapy. These tests are not currently available in New Zealand.

## Treatment

Emergency management involves blood transfusions in dogs that are severely anaemic. Packed red cells or whole blood transfusions are appropriate to replace erythrocytes. Transfused platelets have an extremely short half life in dogs with IMT so platelet transfusion is rarely indicated. Also, platelet enriched plasma is not currently available in New Zealand. Hypovolaemic dogs with IMT can benefit from fluid therapy. Cage rest reduces the risk of further bleeding as well as reducing tissue oxygen demand. Supplemental oxygen may be necessary in severely anaemic animals.

Immune suppression is the most important part of therapy. The most commonly used treatment is prednisone at immunosuppressive doses (1.5 to 2 mg/kg PO bid). Other drugs also used include azathioprine, cyclosporine and cyclophosphamide. Of these azathioprine is most widely used as it is inexpensive and has less chance of adverse side effects. We always use azathioprine in conjunction with prednisone in dogs with IMT. A recent study showed that dogs with IMT given a single dose of vincristine had a more rapid increase in platelet count and a shorter duration of hospitalisation.

## Monitoring

Ideally a CBC should be performed daily until the platelet count reaches >100,000/uL. Once this point is reached weekly checks are recommended until the platelet count is within normal range. Immune suppression is continued for 6 months or more with a gradual taper over this time.

## Prognosis

One study showed a 25% mortality rate - due to haemorrhage or euthanasia. Around 25% will need chronic, long term treatment - mortality rate is higher in these animals. Unacceptable side effects from treatment are another cause for eventual euthanasia. However, prognosis for IMT is slightly better than in dogs with immune-mediated haemolytic anaemia. These cases can be very rewarding to diagnose and treat.