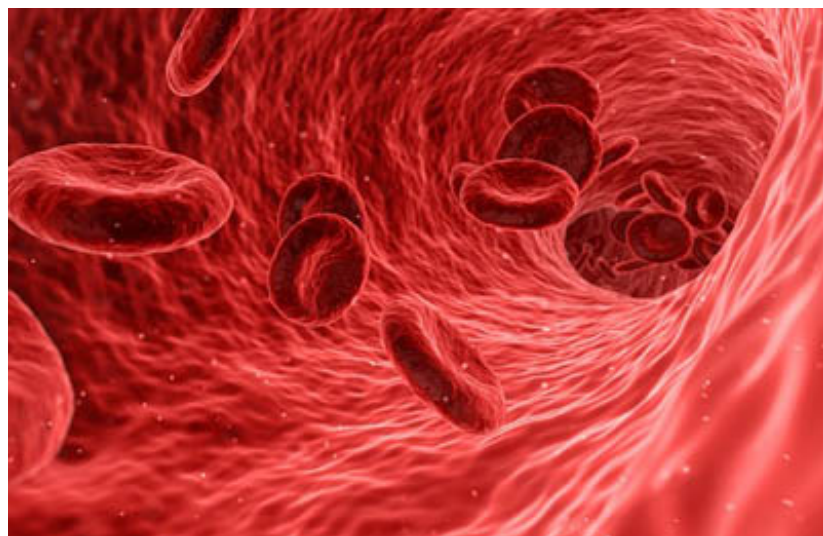


Polycythemia in Cats – Causes, Symptoms & Treatment

 www.cat-world.com.au/polycthemia-in-cats.html

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At a glance:



About: Polycythemia is a condition characterised by a higher than normal number of red blood cells

which cause the blood to become thicker making it harder to pass through small blood vessels to deliver oxygen to the tissues.



Causes: The most common cause is dehydration, other causes include contraction of the spleen due

to epinephrine secretion and over production of red blood cells due to a tumour and abnormal bone marrow production.



Symptoms: Dark mucous membranes, lethargy, blood in the urine, nosebleed, black/tarry feces, increased thirst and urination.



Diagnosis: Baseline tests including complete physical examination and medical history, blood count,

biochemical profile and urinalysis, serum EPO level, arterial blood gas, abdominal and thoracic ultrasound and bone marrow biopsy.



Treatment: Depends on the underlying cause. Fluid therapy will reverse dehydration. Removal of the

blood, medications to slow down red blood cell production, surgery to remove tumours.

What is polycythemia?

Also known as *erythrocythemia*, polycythemia (PV) is a rare blood disorder in which there is an abnormal number of red blood cells in the blood.

The blood is composed of plasma which is the clear fluid component of blood containing antibodies, electrolytes and other proteins, red blood cells, white blood cells and platelets. Red blood cells are the most common type of cell in the blood, amounting to 35-45% of whole blood. Polycythemia is defined as a red blood cell count above 55%. Brachycephalic breeds such as Persians and Exotics, as well as cats who live at higher altitudes, may have a higher packed cell volume than other cats.

There are three classifications of polycythemia in cats:

Relative polycythemia

The most common cause of polycythemia is most commonly due to dehydration. Red blood cell counts are normal, however, plasma levels are decreased resulting in an elevated packed cell volume (PCV). This test measures the volume of red blood cells compared to the fluid portion of the blood.

Transient polycythemia

The spleen is an organ which in part is responsible for storing red blood cells, if the spleen contracts as a result of epinephrine secretion, it will release a large number of red blood cells into the bloodstream.

Absolute polycythemia

Also known as *true polycythemia*, absolute polycythemia results in an overproduction of red blood cells. It may be primary (*polycythemia rubra vera*) or secondary.

- Primary polycythemia is due to overproduction of red blood cells in the bone marrow, which is known as *myeloproliferative neoplasms*.
- Secondary may be due to erythropoietin secreting tumours or inappropriate administration of erythropoietin (when treating anemia caused by kidney disease). Erythropoietin (EPO) is a hormone produced by the kidney which promotes the formation of red blood cells). Other causes of secondary polycythemia may include heart disease and lung disease which cause hypoxia (low levels of oxygen in the blood), which triggers an increase in EPO production.

The average age in cats with polycythemia is 8-9 years old and short-nosed breeds will often have a higher packed cell volume than other cats due to decreased oxygen intake.

Symptoms:

When all blood components are at normal levels, blood is able to flow freely through blood vessels throughout the body. However, if red blood cell levels are higher than normal, the blood becomes thicker (known as *hyperviscosity*), making it more difficult to travel through the smaller blood vessels. This results in reduced oxygen levels reaching the tissues. Symptoms can vary depending on the underlying cause and the type of polycythemia.

Cats with polycythemia vera may not display symptoms until a high degree of hyperviscosity has developed.

One of the most common symptoms of polycythemia is the development of neurological disorders such as seizures, [ataxia](#) (unsteady gait), behavioural changes and blindness

Other symptoms may include:

- Hyperemic mucus membranes (dark/red brick colouration to the gums)
- Reddening of the skin
- Lethargy
- Weakness
- Loss of appetite
- [Nosebleeds](#)
- Increased thirst and urination
- Dark, tarry feces
- Blood in the urine
- The spleen is an organ responsible for removing damaged or abnormal blood cells from the circulating blood. The spleen has to work harder in cats who have polycythemia, and over time can enlarge (splenomegaly).

Relative polycythemia is most often due to [dehydration](#) which may be associated with prolonged vomiting, diarrhea, increased urination, sickness in which may have resulted in your cat taking in fewer fluids or lack of available drinking water.

Cats with secondary polycythemia due to kidney tumours, heart or lung disease may display additional symptoms related to these diseases.

Diagnosis:

You and your veterinarian may not be aware your cat has polycythemia until it is found during a routine *complete count* where the packed cell volume is greater than 55%.

Your veterinarian will perform a complete physical examination of your cat and obtain a medical history from you including a medical history and any medications the cat is taking. Routine tests in addition to a complete blood count will include biochemical profile and urinalysis.

It will be necessary to determine what type of polycythemia your cat has, *relative, transient or absolute*.

Routine urinalysis will pick up relative polycythemia.

Absolute polycythemia will require additional testing which may include:

- Serum EPO level
- Arterial blood gas levels
- Abdominal ultrasound, x-ray or contrast radiography to evaluate the kidneys for signs of kidney disease or tumours as well as evaluate the spleen for signs of enlargement
- Thoracic x-rays or ultrasound to look for causes of hypoxic disease such as heart or lung disease
- Bone marrow biopsy

Treatment:

Treatment depends on the type of polycythemia your cat has.

Relative polycythemia:

- [Fluid therapy](#) to correct dehydration which will be given via intravenous injection.

Absolute polycythemia:

- Surgery to remove tumours.
- Manage heart or lung disease with medications which include beta blockers and diuretics.
- Therapeutic phlebotomy (fle-bot-omy) involves the removal of between 10-20 mL per kg of your cat's blood, this helps to decrease blood viscosity by removing excess red blood cells.
- One cat was treated with [leech therapy](#) as hyperviscosity made it impossible to perform a phlebotomy, although this is an isolated case.
- Iron supplements may be necessary for some cats who may develop low iron levels due to phlebotomy.
- Hydroxyurea (Hydrea) is a medication which can be prescribed to cats who cannot be treated and a phlebotomy is not enough to control blood cell counts. This medication slows down the production of red blood cells in the bone marrow. Side effects may include thrombocytopenia (decreased platelet count), leukopenia (decreased white blood cell count) due myelosuppression, anemia, vomiting, diarrhea, and loss of appetite.

Many cats will require lifelong monitoring of PCV and phlebotomies every 6-8 weeks. It will be possible to wean some cats off hydroxyurea but others will need to stay on the drug for life.

Only administer medications prescribed by your veterinarian.

The prognosis for cats with absolute polycythemia is poor, although some cats have lived for several years after diagnosis.