



Theileriosis in cross-bred cattle

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Theileriosis

- ▶ **Caused by apicomplexan parasites of the genus *Theileria***
- ▶ **They are obligate parasites of the erythrocytes and mononuclear cells of vertebrate hosts, transmitted by ixodid ticks**

Animal	<i>Theileria</i> spp.
Cattle	<i>T. annulata, T. orientalis</i>
Sheep and goats	<i>T. lestoquardi, T. luwenshuni</i>
Horses	<i>T. equi</i>

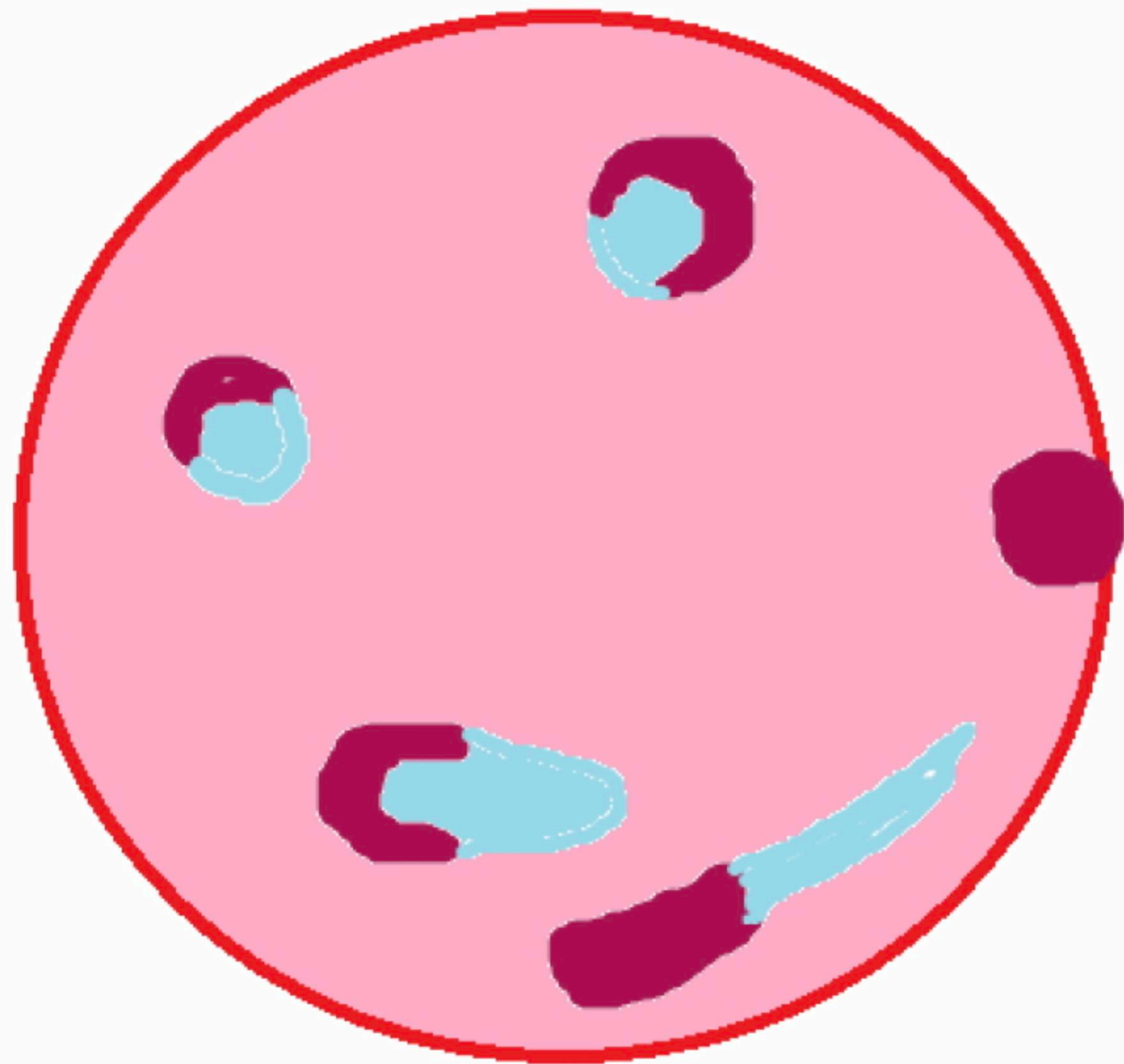


Theileriosis

- ▶ The erythrocytic forms, called as piroplasms are usually round or annular forms. There may be rod or hairpin shaped or tadpole forms too. Occasionally 'anaplasma' forms which appear like dots can also be seen. The chromatin in all these forms appear purple red and the cytoplasm, bluish. Extremely small sized, ring or rounded forms are common. In *T. equi* four merozoites are usually arranged in the form of Maltese cross.
- ▶ The lymphocytic forms, called as Koch's Blue Bodies, contain numerous irregular purplish red chromatin bodies in a bluish cytoplasmic mass in the cytoplasm of lymphocytes. The chromatin may be small and numerous (microschizonts) or large (macroschizont)



Theileriosis



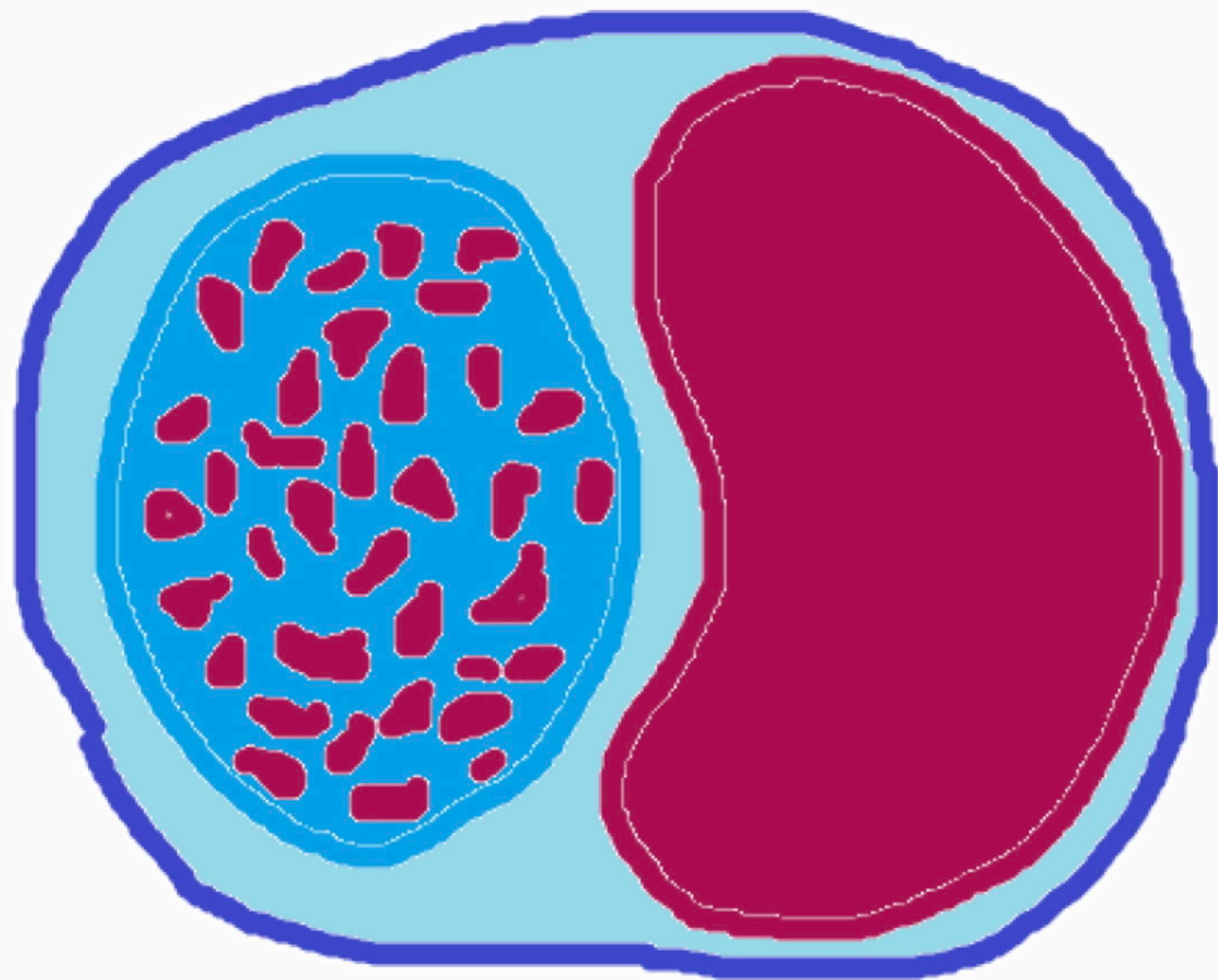


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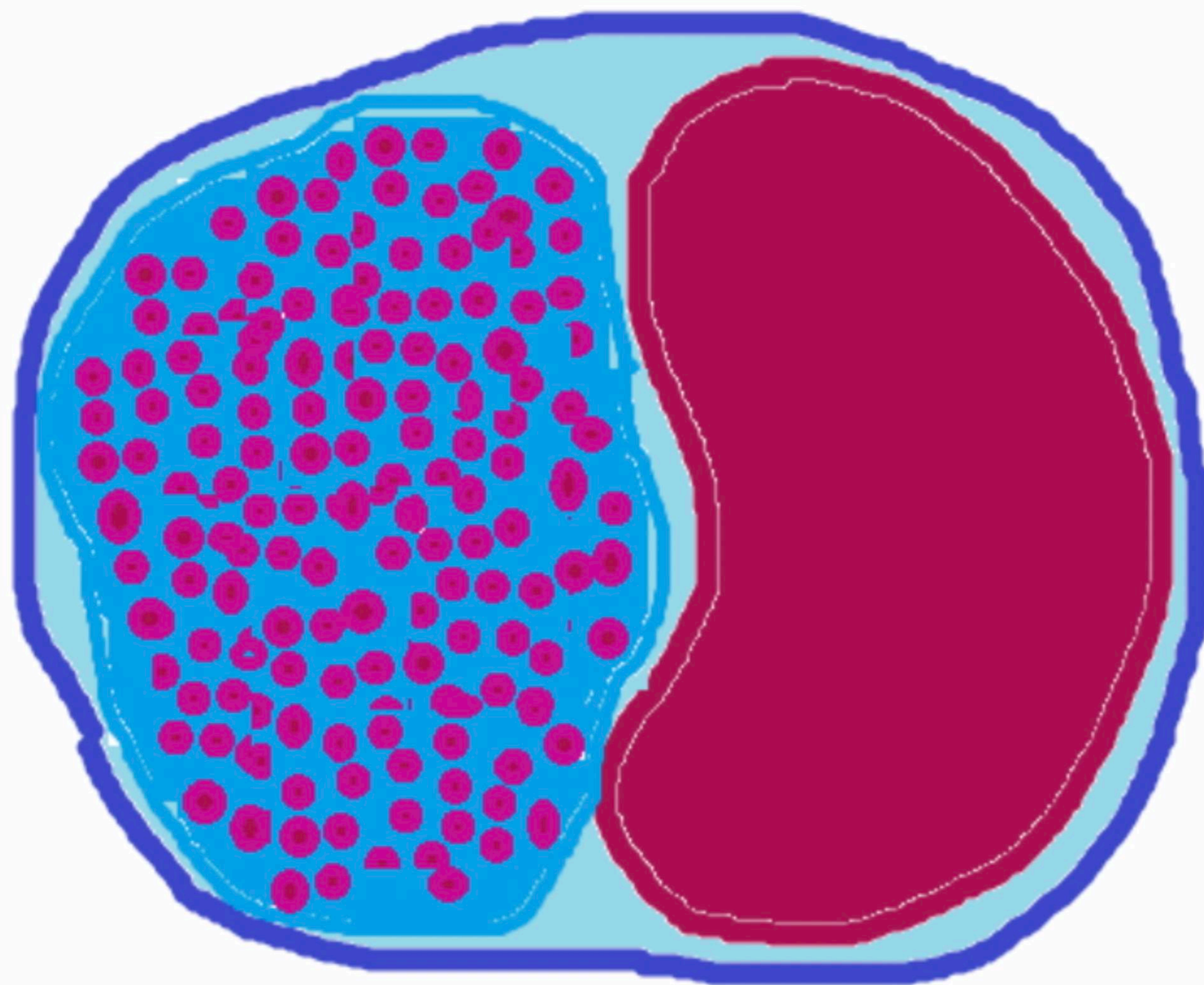


Theileriosis





Theileriosis





Theileriosis

TRANSMISSION:

- ▶ Trans-stadial transmission, infection picked up by the larval stage is transmitted by the nymph, while that picked up by the nymphal stage is transmitted by the adult tick.
- ▶ *Hyalomma anatolicum anatolicum*, *H. marginatum isaaci*, *Hyalomma* spp., *Dermacentor* spp., *Haemaphysalis* spp., *Rhipicephalus* spp., *Anocentor*, *Amblyomma*



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PATHOGENESIS:

- ▶ **Lymphocytic phase:** There is proliferation of the invaded lymphocytes and formation of lymphoblast. The parasite and lymphocyte proliferates synchronously.
- ▶ The parasite associates itself with mitosis of host cell to divide along with the host cell forming the Koch's blue bodies (schizont). Then the organism spreads to all the lymph nodes in the body.
- ▶ This increases the number of infected lymphocytes which in turn causes swelling of the regional lymph nodes.
- ▶ Clonal expansion of infected cells within lymph nodes draining the site of infection is followed by metastasis to other lymphoid and non-lymphoid tissues.



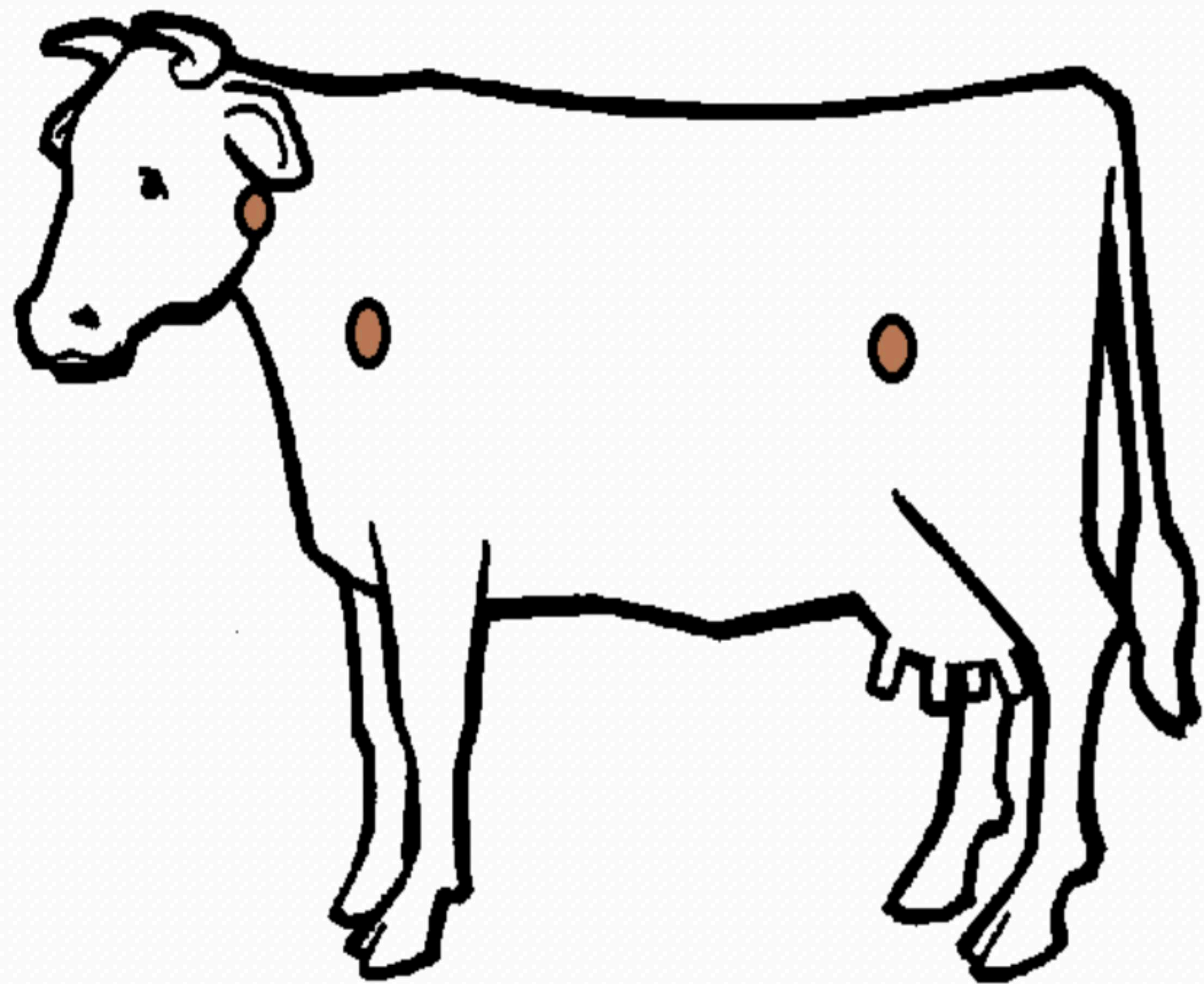
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CLINICAL SIGNS:

- ▶ **Acute phase:** It is characterized by fever of 104-107°F which may be continuous or intermittent for 5-20 days which is associated with the multiplication of merozoites in the infected lymphocytes.
- ▶ There is inappetence, cessation of rumination, weakness, decreased milk production, swelling of the local lymph nodes and eyelids, marked anaemia, sometimes haemoglobinuria, rapid heart beat, dyspnoea, icteric conjunctiva, frothy discharge from the nostrils, lacrimation, diarrhoea, blood and mucous in dung, emaciation, recumbency as well as nervous symptoms in some cases.
- ▶ Haemorrhage in ocular mucosa occurs. Bruxism may be noticed

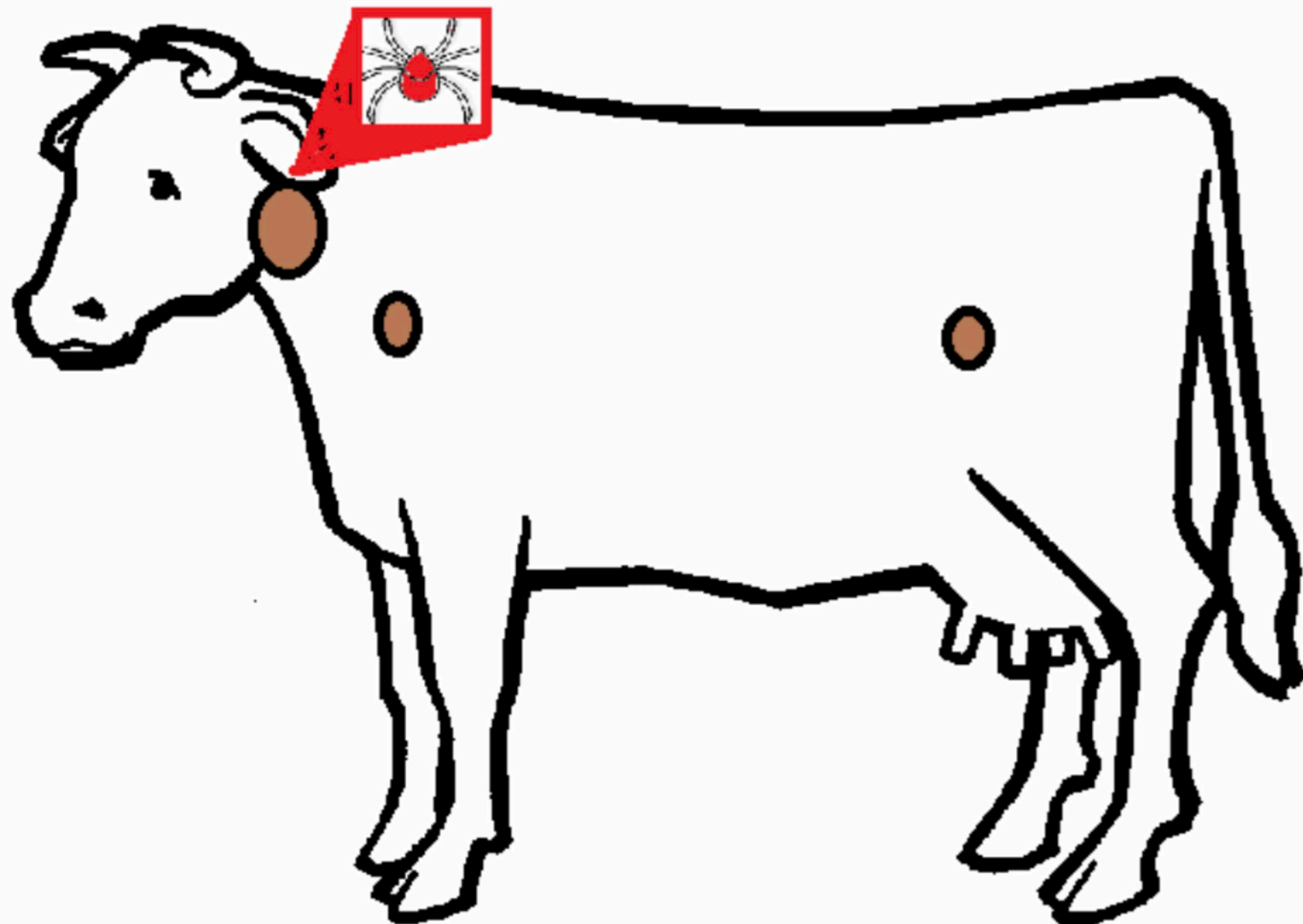


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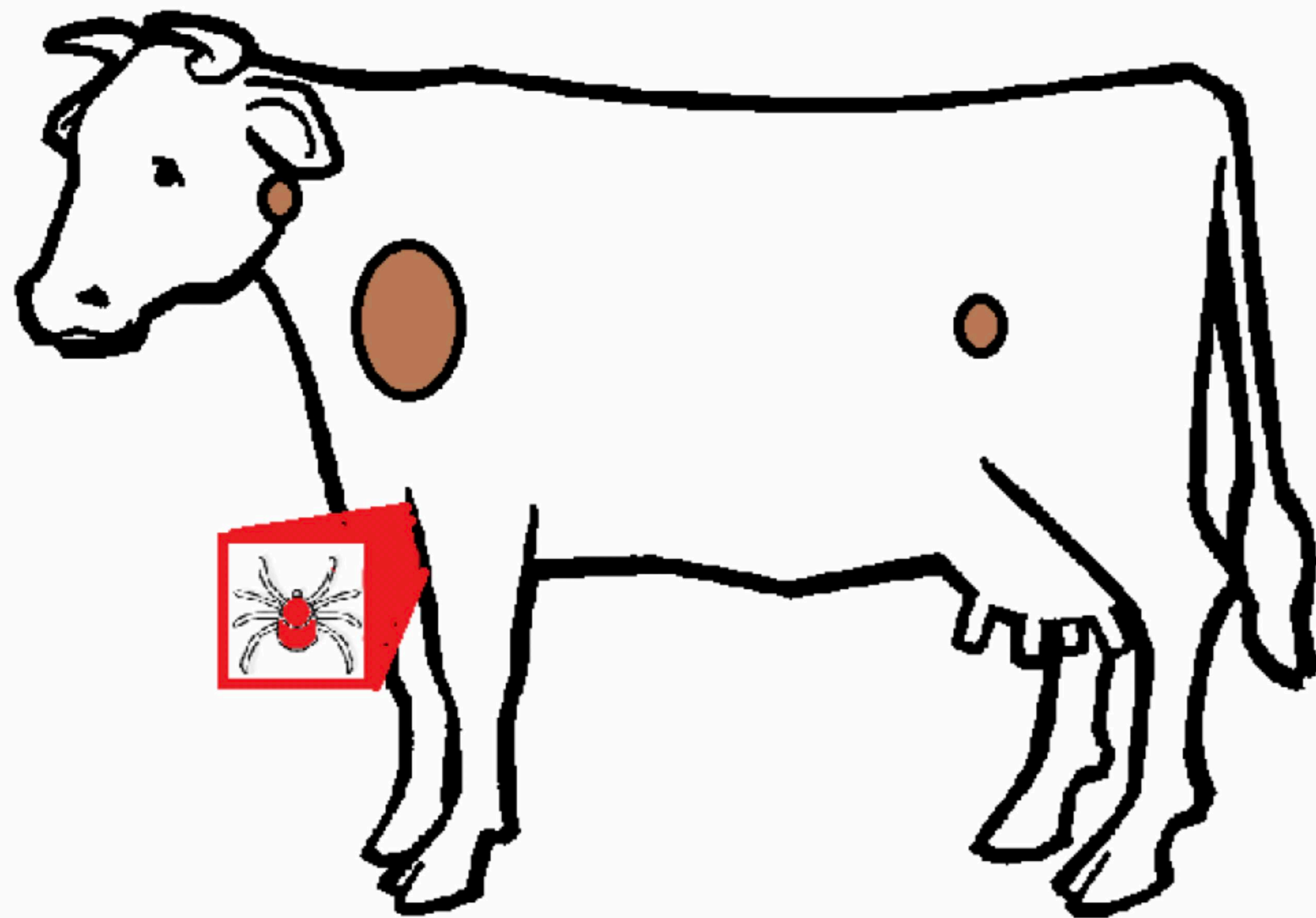


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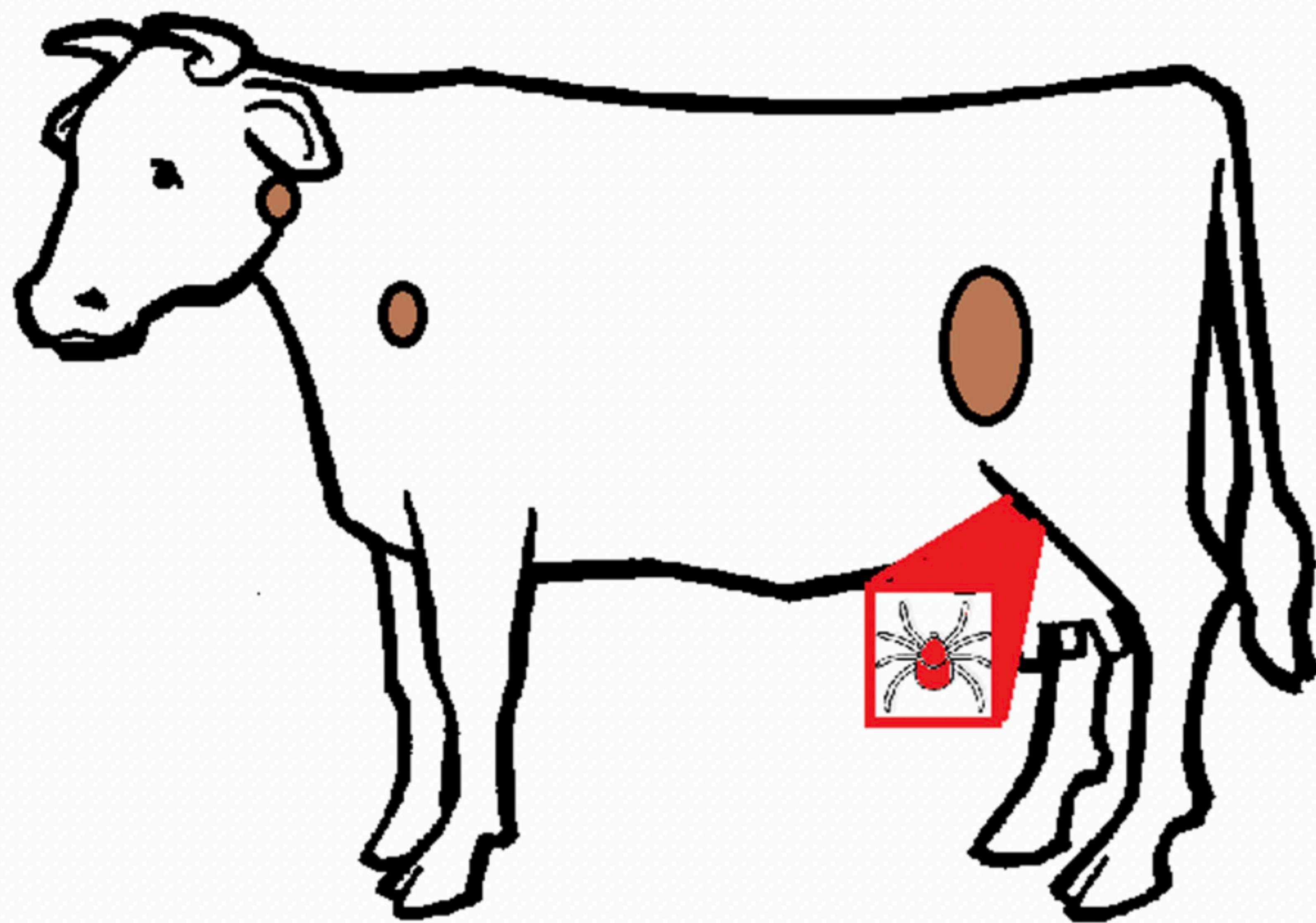


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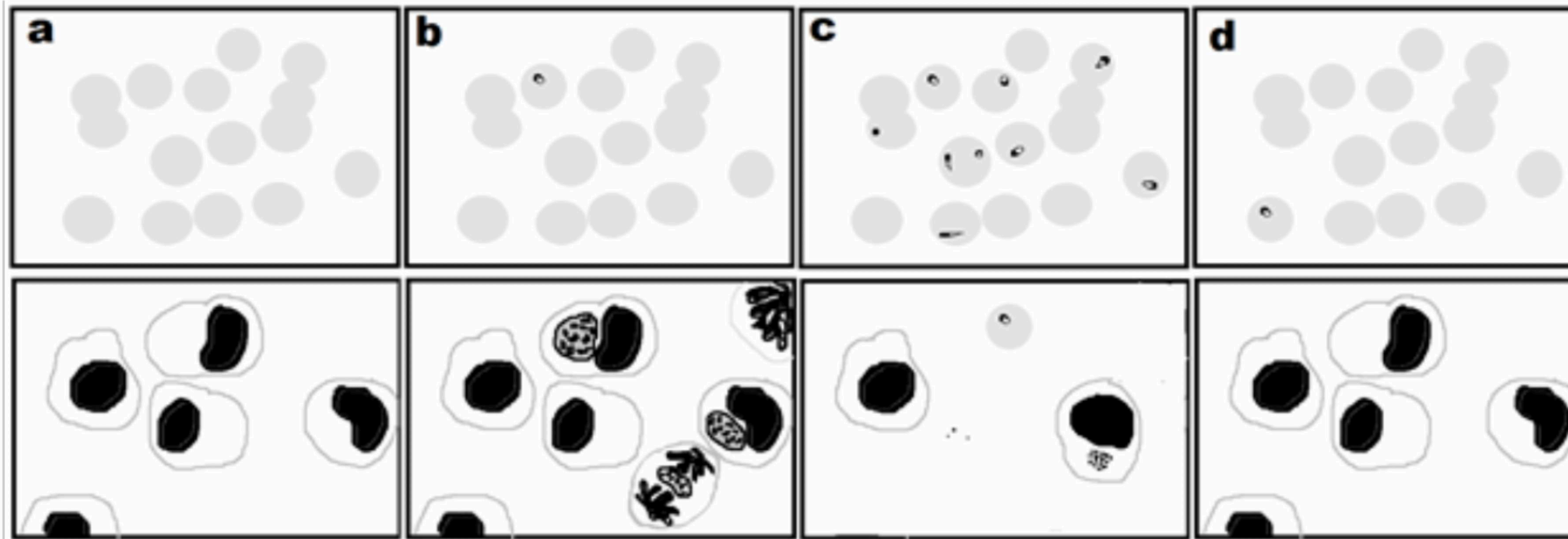




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CLINICAL SIGNS:

- ▶ **Chronic phase:** Chronic form occurs when the disease lasts for 4 weeks to 2 months.
- ▶ It can revert to acute form. There is intermittent fever, inappetence, emaciation as well as some degree of anaemia and icterus.





Theileriosis

CLINICAL SIGNS:

- ▶ ***Theileria orientalis* causes benign or non-transforming theileriosis. Major pathogenesis is by erythrocyte destruction.**
- ▶ **Life cycle is similar to other *Theileria* except that schizonts do not induce transformation and fatal lymphoproliferation.**
- ▶ **Clinical signs include weakness, reluctance to walk, abortion, pallor, pyrexia, elevated heart and respiratory rates.**



Theileriosis

NECROPSY LESIONS:

- ▶ **Enlarged lymph nodes, spleen and liver, infarcts on kidneys, oedematous lungs and pathognomonic punched out ulcers in the abomasum are observed.**
- ▶ **The deposition of immune complexes in the associated lymphoid tissues such as GALT, MALT, etc., is the cause of punched out ulcers in the abomasum.**



Thank you