

Granulomas in cattle

What are granulomas and what do they look like?

Granulomas are firm lesions or lumps in the mouth, lymph nodes and internal organs. They are occasionally detected as part of routine meat inspection procedures. The lesion will appear as firm, fibrous tissue that looks like a solid cancerous growth but, when opened, may have a core filled with pus or other material. The core may have the consistency of cottage cheese. The colour and consistency of the core will vary according to its cause. Granulomas form when the animal's immune system reacts to foreign matter, such as grass seeds or splinters, parasites, fungi or bacteria. The immune system works to contain the material by forming a 'wall' around it. The swelling and the pus-filled core are the results of this reaction.

Granulomas in lymph nodes or organs deep within the body are not visible in live animals. Sometimes the granuloma may present as a condition known as 'lumpy jaw', which may appear as a swelling or a lump under the skin along the jaw-line or throat region, or an animal that is having trouble eating may present with 'wooden tongue'.

What are the most common causes?

The most significant cause of granuloma formation is bovine tuberculosis (bTB), an infectious disease caused by the bacterium *Mycobacterium bovis*. This disease occurs all over the world and infects many species, including humans. While cattle are the natural host of bTB, granulomas caused by the bacterium occur in all farmed mammals and many wild species, including possums and seals¹.

Australia officially declared freedom from bTB in December 1997, successfully concluding a national testing and eradication program that began in the 1970s. Ongoing active surveillance has been discontinued because the last confirmed case of tuberculosis in any Australian animal occurred in 2002. However, as it is not possible for meat inspectors to distinguish between bTB, other granulomas or cancers visually, any granulomas found in cattle or buffalo processed through Australian abattoirs are examined at state or territory veterinary laboratories. This is a form of ongoing passive surveillance to assure continued disease freedom.

There are several other causes of granulomas. Actinobacillosis and actinomycosis are the most common in the Northern Territory.

Actinobacillosis

This bacterial infection causes 'wooden tongue' disease. Slow-forming, tumour-like swellings appear, usually in the tongue. They may restrict tongue mobility, and often involve infection of the lymph nodes in the mouth and throat. Wooden tongue granulomas vary in size from egg to basketball-sized. The core will contain creamy pus. The disease is common, but sporadic in Australia, and occurs worldwide. The causative bacterium is *Actinobacillus lignieresii*. The entry point for infection is via cuts and wounds of the mouth, for example, the eruption of permanent teeth, or via minor abrasions caused by dry, spiky feed.

Actinomycosis

This bacterial infection causes 'lumpy jaw' disease. This predominantly appears as a swelling to the bone of the upper or lower jaw. The bone enlarges and the infected area fills with pus. Over time, the swellings may erupt, producing a thick discharge. This disease is also common but sporadic, occurs worldwide, and is

caused by the bacterium *Actinomyces bovis*. The same simple entry point applies as for 'wooden tongue'. Cattle from properties with a current outbreak of actinomycosis are not eligible for live export to some countries.

See the NSW Department of Primary Industries page for images and more information on [lumpy jaw and wooden tongue in cattle](#).

Other causes

Alternative causes for lesions collected for laboratory examination at abattoirs include cancer, other bacteria or fungi and grass seed abscesses. Old hydatid cysts (a type of tapeworm called *Echinococcus granulosus*) are also a cause of granuloma formation in animals imported to the Territory from other states.

Reference:

1. [Bovine tuberculosis - OIE](#)

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