Tuberculosis

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**Tuberculosis**

**Tuberculosis** is a disease of considerable importance, both from a public health point of view and because of the economic loss to the State occasioned by the destruction of affected carcasses of cattle and pigs condemned at slaughterhouses. It is widespread throughout Australia, but since 1938, when energetic steps were commenced to eradicate the disease from the metropolitan dairy herds of Sydney, considerable progress has been made in its eradication in the milk supply herds of all States.

The cause is a micro-organism known as *Mycobacterium tuberculosis*, of which there are three strains, human, bovine, and avian.

**The Human Strain** affects humans chiefly, but can affect dogs and cats and more rarely, cattle.

**The Bovine Strain** affects cattle and pigs chiefly, and horses, dogs and cats rarely. Humans, particularly children, are also susceptible to this strain.

**The Avian Strain** affects poultry and pigs chiefly, humans rarely. Cases of tuberculosis have been recorded in sheep and goats but they are very rare.

**METHOD OF INFECTION**

While the inhalation of the tubercle bacillus is probably the usual route of infection in humans, both inhalation and ingestion with the food are common routes in cattle and pigs. Infected cattle either cough or breathe out the bacilli into feed boxes or on to walls of dairies. Infected saliva may also contaminate feed boxes or the saliva may be swallowed and the tubercle bacilli passed out onto the pastures.

Tubercle bacilli are not particularly resistant to sunlight, and fortunately many would be killed in this manner. At the same time, in protected positions, such
Fig. 2.—Tuberculosis of the liver in cattle
as feed boxes or under large clumps of trees, bacilli can live for quite considerable periods. One would expect, therefore, a more rapid spread through the herd where ball feeding in closed sheds is practised, and in the field this has often been found to occur.

In the case of pigs, milk from tuberculous cows which are passing the bacilli in the milk is often the cause of heavy infection. However, pigs have frequently been heavily infected by grazing over the same pastures as infected cattle. Water can also be a means of spread of the organisms and streams, creeks, etc., flowing from a heavily infected to a neighbouring property may result in infection in cows on that property.

**Susceptibility.**—Contrary to a widespread belief, no particular breed of cattle or pigs is more susceptible to the disease. However certain animals in individual herds appear to have a degree of resistance to infection.

**SYMPTOMS**

In the majority of cases, cattle or pigs may be affected for years without showing any symptoms. In a small proportion of cases, where the superficial lymphatic glands are involved, swellings may be seen below the ear (parotid lymph gland), under the lower jaw (submaxillary gland), in front of the shoulder (prescapular gland), above the stifle (precrural gland), or above and behind the udder (supramammary gland).

In cows, where the lungs are affected, a characteristic and persistent cough usually occurs. When the lymphatic glands of the throat are affected, a peculiar snoring noise is often evident, such cows commonly being referred to as “snorers.”

Whilst cattle without symptoms or with any of the symptoms described above may live and maintain their condition for years, occasionally, due to some lowering of resistance brought about by poor feeding, drought conditions, strain of calving, or any other factor which may lower resistance, the disease may progress rapidly within the animal's body. Such animals rapidly become emaciated, usually cough, particularly if driven, and may die within a variable period.

**POST MORTEM APPEARANCE**

**Cattle.**—As cattle may be affected in almost any organ of the body, the post mortem findings will naturally vary considerably depending on the location of the disease.

The lymphatic glands are the organs most generally affected. In the very early stages these glands will be swollen and flabby, but quickly develop small yellow cheesy areas which develop in size and later become calcified (chalky). The lesions then are creamy or white in colour, due to the deposition of lime salts, and when cut have a gritty feel.

Of the other organs the lungs and liver are most frequently affected. In the lungs tuberculous abscesses are scattered throughout the lung tissue, whilst the adjoining bronchial and mediastinal lymphatic glands will also show tuberculous lesions in most cases. In some advanced cases masses of tuberculous nodules may cover the pleura (lining of the chest cavity)—the so-called “grapes.”

In the infected liver the typical tuberculous abscesses will be seen, varying in number from one or two to large numbers throughout the tissues.

**Pigs.**—As the usual method of infection in pigs is by ingestion, sites usually affected are the lymphatic glands of the throat, head, and intestines. Lesions in pigs do not usually exhibit the characteristic yellow coloured material found in cattle, but are generally paler in colour.

**PUBLIC HEALTH**

The disease can be transmitted to humans through infected milk. Whilst adults are relatively immune, children up to the ages of about 15 to 16 years are particularly susceptible. Tuberculosis so contracted often results in a crippling condition due to infection of the spine or joints. In very young children bovine tuberculosis of the intestines has been responsible for death.

Fortunately only a small proportion of infected cows pass the tubercle germs in the milk. However, as these germs may be
Fig. 3.—Tuberculosis of the lungs in cattle
passed intermittently rather than continuously, diagnosis involving examination of the milk may be misleading. In any case, detection of the tubercle germ in the milk requires guinea pig inoculations and a period of 6 to 8 weeks before results can be ascertained. Except for special purposes, therefore, milk examination is of little value in the detection of tuberculosis in cows.

**DIAGNOSIS**

Visual diagnosis is only possible in animals showing emaciation, particularly accompanied by a persistent cough, or in those animals exhibiting infections of the superficial lymphatic glands where the swellings are obvious to the naked eye.

Owing to the difficulty in diagnosing the disease in the majority of affected animals, special tests have been devised. The tuberculin test as used at present is a most reliable diagnostic agent, enabling tuberculosis animals, both cattle and pigs, to be detected and eliminated from herds. As these tests, by law, can only be carried out by qualified veterinarians, there is little to give details of the methods employed, except to mention that the test in general use at present consists of an injection into one tail fold followed by examination of the site of injection in three to four days.

**CONTROL**

As there is no treatment which is known to be successful in curing tuberculosis in in stock, control must be based on the ability to locate tuberculous animals, followed by their destruction. For this purpose, the tuberculin test may be used in both cattle and pigs.

In dairy herds, particularly where hand feeding in bails is being practised, removal of tuberculous cattle should be followed by a thorough disinfection of feed boxes, walls, water troughs, etc.

Where cattle and pigs are run together, any attempt at eradication in the pigs must be preceded by testing of the cattle and disposal of re-acting animals.
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