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WHAT IS YOUR DIAGNOSIS?

by Gregory F. Grauer* and Dr. Russell Mittent

History

A two year old, spayed female, German Shepherd was examined because of a lameness in the left front leg. The lameness was intermittent for six months but now the dog is always lame whether walking or standing. Palpation revealed a painful area on the cranial-lateral aspect of the left humerus just below the shoulder joint.

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Radiograph 1: Medial-lateral view of left humerus.

Radiograph 2: AP view of left humerus.
Radiograph 3: Lateral view of thorax.
**Radiographic Diagnosis**

A proliferative and destructive bone lesion exists in the left humerus. The appearance of this lesion suggest a primary bone tumor or an osteomyelitis. A biopsy of the bone lesion is recommended.

**Comment**

An area of new bone growth, which has almost completely encircled the cortex, exists on the proximal humerus. An area of cortical destruction is present on the posterior aspect of the humerus. There are also several "pin point" lytic areas in the new bone. The location of the lesion is near the metaphysis which is a site of predilection for primary bone tumors. However, the age of the animal and appearance of the lesion are somewhat unusual and the possibility of osteomyelitis, perhaps fungal in origin, should be investigated.

**Follow Up**

A bone biopsy revealed the presence of *Aspergillus sp.* Thoracic radiographs revealed nodular densities throughout the lung fields. The dog was euthanized and at necropsy a diagnosis of disseminated Aspergillosis was confirmed.

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**Nitrite**

**What is Nitrate?**

Sodium nitrate is a naturally-occurring substance in vegetables, water, soil, and even the air. Originally discovered as an impurity in salt, small amounts have been used for thousands of years to cure meats.¹

**What is Nitrite?**

Sodium nitrite, also used to cure processed meats, is a derivative of sodium nitrate. When nitrate is used to cure meats, it converts to nitrite. Nitrite is the active ingredient. Both nitrate and nitrite usage are allowed under the Meat Inspection Act.

**What Does Nitrite Do?**

Nitrite is essential in cured meats because it performs several vital functions:

- it prevents botulism.²³ Nitrite provides a safeguard against mishandling by manufacturers, distributors, retailers or consumers (i.e., failure to refrigerate properly because of mechanical malfunction, negligence or ignorance). A recent USDA study concluded that 63% of the 2,500 households surveyed ran a "high risk" of food-borne illness because of a lack of awareness of basic safe food handling practices.⁴
- it gives cured meats their special flavor and appearance; without it, we could not have bacon, sausages, hams and other meat products as we now know them.
- it retards oxidation which otherwise causes an undesirable (warmed over) flavor.

Nitrite is the only substance that will do all these things. No substitute has been found even though more than 700 substances have been tested as possible replacements.

**Why the Controversy?**

Nitrite can combine with secondary amines to form compounds called nitrosamines. When fed in large quantities, nitrosamines can cause certain types of cancer in laboratory animals. The meat industry became concerned in 1970 because secondary amines can be found occasionally in small quantities in meats.

The American Meat Institute brought this potential problem to the attention of USDA and the FDA, and the three organizations have engaged in extensive, joint nitrite research since then. In fact, AMI and its member companies have spent millions of dollars on efforts to explore the matter fully.

Results of difficult, time-consuming analyses have shown that virtually all cured meat products are free of nitrosamines. However, minute amounts of a nitrosamine called nitrosopyrrolidine have been discovered in some bacon as a result of severe frying.

**Expert Panel Formed**

In September, 1973, the Secretary of Agriculture appointed a six-member Expert Panel on Nitrates, Nitrites and Nitrosamines to advise the Department on the safety and continued use of these substances. After

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