Pyothorax in Cats

Pyothorax is a bacterial infection that develops in the chest cavity, also called the pleural space. This space is located between the lungs and the chest wall. Presence of bacteria in the chest cavity causes white blood cells and fluid to migrate into the pleural space; eventually, pus will begin to accumulate. The presence of fluid in the chest cavity causes a mechanical problem in that it limits the amount of room available for the lungs to expand. As fluid accumulates, the cat tries to compensate by breathing more rapidly. As more and more fluid builds up, the cat is forced to take very shallow breaths. Pain associated with inflammation in the pleural space (pleuritis) may also contribute to shallow breathing. In addition to respiratory difficulties, the infection in the chest releases toxins into the blood stream; this is a further stress on the cat.

Pyothorax is a potentially fatal disease, even if treated. The best chance for survival is given when aggressive therapy is instituted. The time for recovery from pyothorax can be protracted and the expense may be significant.

Prevalence

Fortunately, pyothorax is a relatively uncommon occurrence in the cat.

Clinical Signs

Initially, there may be no apparent signs of pyothorax. This is because most cats are adept at hiding respiratory problems until they are fairly advanced. With gradual accumulation of fluid in the chest, the cat will initially adapt by decreasing its activity level. Frequently, by the time owners are aware of a problem, the cat has a significant degree of respiratory distress and can die from even slight stress, such as transport to the hospital. Some of the signs which are present in the cat with pyothorax may include breathing in a crouched position with the next extended and an abdominal "lift" or press with each respiration. Cats who are observed to breathe with an open mouth are usually in very severe distress and should be handled with extreme caution. Respiratory arrest may result from struggling against restraint or becoming upset.

Causes/Transmission

The answer to this question is subject to debate and, in fact, there are probably a number of different causes. We know that severe dental disease may release bacteria into the blood stream; this blood-borne infection may eventually reach the pleural space. Foreign bodies, such as grass awns, are known to cause pyothorax if they migrate into the chest. Bites wounds through the chest wall are also recognized as a potential cause. Investigations of cats with pyothorax have demonstrated that, in most cases, the exact cause of pyothorax is rarely determined.

Diagnosis

A cat with fluid in the chest cavity will have characteristic respiratory patterns, as described above. However, to confirm that the fluid is pus, a small amount of fluid must be withdrawn from the chest cavity and examined under the microscope. Large numbers of white blood cells and bacteria can be seen on the microscope slide. In most cases, the fluid is submitted for bacterial culture; however, the types of bacteria that grow in the chest cavity are notoriously difficult to culture. Even if the laboratory is unable to successfully grow the bacteria, this does not lessen the seriousness of the situation.

Treatment

The ideal method of treatment involves surgical placement of a drain tube into the pleural space. The tube usually remains in place for several days. Placement of a chest tube offers several benefits in both the diagnosis and management of this condition.

1. It allows the chest cavity to be more completely emptied than is possible with intermittent drainage by a syringe and needle. It is also avoids repeated painful penetration of the chest with a needle.
2. It allows cleansing solutions to be flushed into the chest.
3. Once a chest tube is in place, the rate of ongoing fluid formation and changes in the character of the fluid can be assessed.
4. It is very helpful in preventing further accumulation of pus in the chest cavity.

Antibiotic therapy is also a cornerstone of treatment. A sample of the pus is sent to the laboratory for identification of the bacteria and determination of an appropriate antibiotic. Because lab tests can tell us which antibiotic is best, the cat's chances of recovery are greatly improved when the fluid is cultured. Most cats are started on an injectable antibiotic; after improvement occurs and the drain tube is removed, it is usually possible to continue treatment at home with an oral antibiotic.

Most cats require drainage through the chest tube for about several days. They are hospitalized during that phase of treatment. When pus accumulation stops, the tube is removed and the cat is sent home to complete treatment. Complete treatment usually takes several weeks. If it is stopped too soon, relapse may occur.

Prognosis

Left untreated, pyothorax is fatal. With aggressive and appropriate therapy, many cats will survive. Cats with other (concurrent) diseases will have a poorer prognosis than cats with no other problems. Of particular significance would be cats infected with the feline leukemia virus or feline immunodeficiency virus. Complications include spread of the infection to other organs and the development of adhesions (or scar tissue) between the lungs and chest wall. Adhesions often lead to reduced lung function in some patients.