TRAUMATIC PERICARDITIS

Perforation of the pericardial sac by a sharp foreign body originating in the reticulum causes pericarditis with the development of toxemia and congestive heart failure. Tachycardia, fever, engorgement of the jugular veins, anasarca, hydrothorax and ascites, and abnormalities of the heart sounds are the diagnostic features of the disease.

Etiology

Traumatic pericarditis is caused by penetration of the pericardial sac by a

migrating metal foreign body from the reticulum. The incidence is greater during the last 3 months of pregnancy and at parturition than at other times. Approximately 8% of all cases of traumatic reticuloperitonitis will develop pericarditis. Most affected animals die or suffer from chronic pericarditis and do not return to completely normal health.

PATHOGENESIS:

The penetration of the pericardial sac may occur with the initial perforation of the reticular wall. However, the animal may have had a history of traumatic reticuloperitonitis sometime previously, followed by pericarditis, usually during late pregnancy or at parturition. In this case it is probable that the foreign body remains in a sinus in the reticular wall after the initial perforation and penetrates the pericardia sac at a later date. Physical penetration of the sac is not essential to the development of pericarditis, infection sometimes penetrating through the pericardium from a traumatic mediastinitis.

Introduction of a mixed bacterial infection from the reticulum causes a severe local inflammation, and persistence of the foreign body in the tissues is not

essential for the further progress of the disease. The first effect of the inflam­

mation is hyperemia of the pericardial surfaces and the production of friction

sounds synchronous with the heart beats. Tw o mechanisms then operate to produce signs: the toxemia due to the infection and the pressure on the heart from the fluid which accumulates in the sac and produces congestive heart failure. Depression is characteristic of the first and edema of the second. Thus an affected animal may be severely ill for several weeks with edema developing only gradually, or extreme edema may develop within 2-3 days. The rapid development of edema usually indicates early death. If chronic pericarditis persists there is restriction of the heart action due to adhesion of the pericardium to the heart. Congestive heart failure results in most cases but some animals may recover. An uncommon sequel after perforation of the pericardial sac by a foreign body is rupture of a coronary artery or the ventricular wall. Death usually occurs suddenly due to acute, congestive heart failure from compression of the heart by the hemopericardium, and often without premonitory illness.

CLINICAL FINDINGS

Depression, anorexia, habitual recumbency and rapid weight loss are common.

Diarrhea or scant feces may be present and grinding of the teeth, salivation and

nasal discharge are occasionally observed. The animal stands with the back arched and the elbows abducted. Respiratory movements are more obvious, being mainly abdominal, shallow, increased in rate to 40-50/min and often accompanied by grunting. Engorgement of the jugular veins, and edema of the brisket and ventral abdominal wall are common and in severe cases there may even be edema of the conjunctiva with grape­like masses of edematous conjunctiva hanging over the eyelids. A prominent jugular venous pulse is usually visible and extends proximally up the neck. Pyrexia (40-41C,) is com­

mon in the early stages and an increase in the heart rate to 100/min and a dimi­

nution in the pulse amplitude are constant. Rumen movements are usually present but depressed. Pinching of the withers to depress the back or deep palpation of the ventral abdominal wall behind the xiphoid sternum commonly elicits a marked painful grunt. A grunt and an increased area of cardiac dullness can also be detected by percussion over the precordial area, preferably with a pleximeter and hammer. Auscultation of the thorax reveals the diagnostic findings. In the early stages before effusion commences, the heart sounds are normal but are accompanied by a pericardial friction rub

. Care must be taken to differentiate this from a pleural friction rub due to inflammation of the mediastinum. the heart sounds are muffled and there may be gurgling, splashing or tinkling sounds. In all cases of suspected pericarditis, careful auscultation of the entire precordium on both sides of the thorax is essential as abnormal sounds may be audible only over restricted areas. This is especially so in chronic cases. Most affected animals die within a period of 1-2 weeks, although a small proportion persist with chronic pericarditis.

Enlargement of the liver may be detectable by palpation behind the upper

part of the right costal arch in the cranial part of the right paralumbar fossa. Death is usually due to asphyxia and toxemia. . The heart sounds are

muffled and fluid splashing sounds may be heard over small discrete areas

corresponding to the loculi of fluid in the sac, or there may be irregularity of

the heart beat.

- CLINICAL PATHOLOGY

Hemogram

A pronounced leukocytosis with a total count of 16000-30000/pL accompanied

by a neutrophilia and eosinopenia is usual although less dramatic changes are

recorded in one series of cases.

- Pericardiocentesis

When gross effusion is present the pericardial fluid may be sampled by

centesis with a 10 cm -gauge needle over the site of maximum audibility of the

heart sound, usually in the fourth or fifth intercostal space on the left side. In mid­stage pericarditis the fluid is usually easily obtained, and is foul-smelling and turbid, which is diagnostic for pericarditis. In chronic pericarditis only small amounts may be present and a sample may not be obtainable.

NECROPSY FINDINGS

In acute cases there is gross distension of the pericardial sac with foul-smelling, grayish fluid containing flakes of fibrin, and the serous surface of the sac is covered by heavy deposits of newly formed fibrin. A cord-like, fibrous sinus tract usually connects the reticulum with the pericardium. Additional lesions of pleurisy and pneumonia are commonly present. In chronic cases the pericardial sac is grossly thickened and fused to the pericardium by strong fibrous adhesions.

TREATMENT

The results of treatment are usually unsatisfactory but salvage of up to 50% of

cases can be achieved by long-term treatment with antimicrobials. Rapid

onset of generalized edema represents a poor prognosis. Drainage of the pericardial sac may temporarily relieve the edema and respiratory embarrassment but relapse usually occurs within a few days . Selected cases of traumatic pericarditis have been treated satisfactorily by pericardiotomy.

PREVENTION

Prevention depends on preventing traumatic reticuloperitonitis through

management of the environment and the administration of reticular magnets.

TRAUMATIC SPLENITIS AND HEPATITIS

Traumatic splenitis and hepatitis occur relatively uncommonly as sequelae to

traumatic reticuloperitonitis and are manifested either by continuation of the illness caused by the initial perforation or by apparent recovery followed by relapse several weeks later. The prominent clinical findings include fever (39.5-40.5°C, ), tachycardia, gradual decrease in feed intake and milk yield but ruminal

movements may be present and may be normal. Pe rcussion of the abdomen over

the site usually used to detect the pain of traumatic reticuloperitonitis gives a negative response although deep, forceful palpation may elicit a mild grunt. The

diagnostic sign is pain on palpation with the thumb in the last two intercostal spaces halfway down the abdomen on the right side when there is hepatic involvement, and on the left side when the spleen is affected. The total leukocyte count is elevated (above l2000/pL) with a marked neutrophilia and a left shift. Rumenotomy is not usually undertaken except for diagnostic purposes. Tre atment with antibacterial drugs is effective if commenced sufficiently early. Oral treatment with sulfadimidine has been effective in some cases.