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Bloat in Animals: Recognition, Emergency Management and Prevention

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Bloat is a life-threatening build-up of gas in the stomach that can kill within hours if it is not recognised and treated. This article reviews the condition in two groups of animals in which it matters most: ruminants (cattle, sheep and goats), in which it is called ruminal tympany, and dogs, in which it appears as gastric dilatation-volvulus (GDV). In ruminants, bloat is either frothy, caused by a stable foam that traps fermentation gas, or free-gas, caused by an obstruction or an inability to belch. In dogs, a gas-filled stomach may twist and cut off its own blood supply. Although the two diseases differ in cause and treatment, both are emergencies in which minutes count, and in both prevention is far more effective than cure. Key measures include gradual dietary change and anti-foaming supplementation in ruminants, and awareness of breed risk, feeding management and preventive gastropexy in dogs. Keepers should learn the early signs, avoid home remedies and contact a veterinarian immediately.

Keywords: bloat; ruminal tympany; gastric dilatation-volvulus; cattle; dogs; gastropexy; animal health

Introduction

Few conditions in veterinary practice move as fast as bloat. An apparently healthy animal can be distended, distressed and in shock within hours, and some are simply found dead. The word covers two very different diseases. In ruminants, bloat (ruminal tympany) is a failure of the normal process of belching, so that gas produced by fermentation in the rumen accumulates. In dogs, the stomach fills with gas and may also rotate on its long axis, a syndrome known as gastric dilatation-volvulus (GDV). Both conditions can compromise breathing and circulation. This article summarizes the causes, signs, treatment and prevention of bloat in these two groups, drawing on veterinary reference texts and published studies, so that farmers, pet owners and animal-health workers can act quickly and correctly.

Bloat in Ruminants

Types and causes

Two forms are recognized [1, 4]. Frothy bloat (primary ruminal tympany) occurs when the normal gases of fermentation are trapped in a stable foam that floats on the rumen fluid and blocks the escape of gas. It is usually diet-related: lush legume pastures such as alfalfa and clover, small-grain pastures such as wheat, and high-grain rations are the classic causes [1, 2]. In feedlots the disease is most common in cattle that have been on a grain diet for one to two months [1]. Because the cause is shared by the group, several animals are often affected at

once; one UK disease report suggests that frothy bloat can affect up to a quarter of a group [4]. Free-gas bloat (secondary ruminal tympany) occurs when gas is free in the rumen but cannot be expelled. Common causes are a physical obstruction of the oesophagus or pressure on it from outside [3]. It typically affects one or two animals rather than the whole group [4]. The disease is predominantly seen in cattle but may also occur in sheep [1].

Signs and diagnosis

The earliest sign is distension of the left flank, behind the last rib, which becomes progressively tighter. Affected animals stop eating, look uncomfortable, may kick at the abdomen, drool and breathe with difficulty, and eventually collapse. Animals that are not observed closely, such as those at pasture, in feedlots or dry dairy cows, are often found dead, whereas lactating dairy cattle, which are seen daily, commonly show signs within an hour of being turned onto a bloat-producing pasture [1]. Passing a stomach tube helps to separate the two forms: gas escapes in free-gas bloat, whereas in frothy bloat the tube does not relieve the distension and foam is present in the tube when it is withdrawn [1, 4].

Treatment

Bloat is an emergency and a veterinarian should be called at once. While waiting, remove the animal from the pasture or feed and keep it calm. For frothy bloat, an anti-foaming (surfactant) agent such as mineral oil or poloxalene is given through a stomach tube so that the foam collapses and gas can escape [2, 4]. In a herd outbreak, all animals should be taken off the offending pasture immediately and given a high-fibre diet such as hay or straw, and any animal showing signs should be treated [4]. For free-gas bloat, the stomach tube releases the gas and any oesophageal obstruction is removed [1, 3]. When an animal is close to death, the veterinarian may need to perform an emergency rumenotomy [1], and animals that suffer repeated episodes may require rumen fistulation surgery [3]. Products and doses should always be chosen by the attending veterinarian.

Prevention

Prevention is the key to control. The most useful practical measures are:

- **Gradual introduction.** Introduce cattle to high-risk pastures slowly, and avoid sudden access to lush legume or small-grain pasture [2, 4].
- **Dilute the risk.** Offer other feeds, such as dry hay, that dilute the soluble protein entering the rumen, and do not give animals the chance to overeat [2].
- **Anti-bloat supplements.** Ionophores and poloxalene are effective when supplied before the onset of risk; availability varies, so ask your veterinarian [2].
- **Careful ration changes.** Move animals onto high-grain rations in stages and monitor them closely [1].
- **Observation.** Check animals frequently during the first hours on new feed or pasture, because signs can begin within an hour [1].

Bloat in Dogs (Gastric Dilatation-Volvulus)

Mechanism and risk factors

In GDV the stomach distends with gas and may rotate. The twist compresses major abdominal vessels, impairing circulation and leading to shock within hours [5]. The condition accounts for roughly 2.9 to 6.8 cases per 1,000 canine hospital admissions [5], and published mortality estimates vary widely, from about 10% to 55% [7]. Breed is the strongest risk factor. Large and giant deep-chested breeds are most often affected; a UK emergency-practice study, as summarized in [5], reported a prevalence of 14.0% in Great Danes and 9.2% in Akitas, and a lifetime risk as high as 42% has been reported in Great Danes [8]. Other recognized risk factors include increasing age, a high chest depth-to-width ratio, lean body condition, a fearful temperament and a first-degree relative with GDV [5, 7, 8]. In a central-European survey, a parent with GDV carried an odds ratio of about 3.4, and intact males were at higher risk while spayed females were at lower risk [6]. Evidence on diet and routine is less consistent. Rapid eating, once-daily feeding and small food particles have each been linked with higher risk, but the same survey found no effect of feeding frequency and a lower risk in dogs eating meals with large pieces (over 3 cm) [6, 7]. Exercise around

mealtimes is often blamed, yet studies disagree [6, 7]. GDV is not confined to adults: it has been reported in a five-month-old Bernese mountain dog [8], and early genetic work suggests that inherited variation in genes affecting gastric motility may contribute, although these findings are preliminary [5].

Signs and emergency action

Suspect GDV in any large-breed dog with a swollen, tight abdomen, repeated unproductive retching or vomiting, drooling and rapid breathing [8]. As shock develops the gums may become pale or congested, the heart rate rises and the dog may weaken and collapse [5, 8]. Because deterioration is rapid, the dog should go to the nearest emergency veterinarian immediately; owners should not wait to see whether the signs pass and should not attempt home remedies.

Treatment

Treatment combines emergency stabilization (intravenous fluids, pain relief and decompression of the stomach) with surgery to return the stomach to its normal position and fix it to the body wall, a procedure called gastropexy [8]. The gastropexy is vital: without it GDV recurs in up to 80% of survivors, compared with under 5% when it is performed [5].

Prevention

The most effective preventive measure is prophylactic gastropexy, usually done in at-risk breeds at the time of spaying or neutering, or during other abdominal surgery. In a retrospective study of 766 dogs, complications directly attributable to the gastropexy were rare (0.4%), and none of the 446 dogs with long-term follow-up (median 876 days) developed gastric dilatation or GDV [7]. The overall complication rate was 14.4%, mostly minor wound problems linked to the accompanying surgery [7]. Owners of high-risk breeds should discuss gastropexy with their veterinarian early. Management measures are sensible additions, although the evidence for them is weaker than for surgery: feed measured meals rather than one very large meal, discourage gulping (for example with slow-feeder bowls), avoid strenuous exercise and stress around mealtimes, and avoid breeding from dogs with an affected parent [6, 7].

Table 1. Bloat in ruminants and dogs at a glance.

Feature	Ruminants (cattle, sheep, goats)	Dogs (gastric dilatation-volvulus)
Mechanism	Gas trapped in foam (frothy) or unable to be belched (free-gas)	Stomach fills with gas and may rotate, cutting off blood flow
Main triggers	Lush legume or wheat pasture, high-grain diets, oesophageal obstruction	Deep, narrow chest; breed; age; family history; temperament
Typical signs	Swollen left flank, discomfort, drooling, laboured breathing, collapse	Swollen tight abdomen, unproductive retching, drooling, restlessness, pale gums
First action	Call the vet; remove from pasture or feed; stomach tube with anti-foaming agent	Go to an emergency vet immediately; no home remedies
Best prevention	Gradual dietary change; dry fibre first; anti-bloat supplements	Preventive gastropexy; feeding management; informed breeding

Conclusion

Bloat is easier to prevent than to treat. In ruminants, careful grazing and feeding management, together with anti-bloat supplements where appropriate, remove most of the risk. In dogs, awareness of breed and family risk and early discussion of preventive gastropexy offer the best protection. In both, recognising the early signs and getting veterinary help without delay is what separates survival from loss. Keepers should know the signs for their species, keep their veterinarian's emergency number to hand and, when in doubt, act immediately.

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