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IDENTIFYING BIOCHEMICAL CHANGES IN THE BLOOD DURING COLIC IN HORSES

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Abstract
Currently, equestrian sports are rapidly developing in our country, and attention to this field is growing. This, in turn, requires high-quality veterinary services for valuable horses and those with high genetic potential. There are many problems hindering the development of horse breeding in our country, the main ones being infectious and non-infectious diseases of horses. This article discusses colic — one of the most common diseases among horses, which, if not treated in time, can lead to death. Colic is very widespread among horses and causes serious damage to horse-breeding farms. Therefore, in this research, we have aimed to shed light on the diagnosis, treatment, and prevention of colic in line with practical needs.

Keywords: Colic, thrombus, spasm, spasmolytic, diagnosis, biochemical blood analysis.

Introduction

Colic (Colica) refers to painful cramps accompanied by restlessness. This group includes many diseases of the stomach and intestines, which result in stagnation of the food mass in the gastrointestinal tract, disturbance of motor, absorptive, and secretory functions. These diseases mainly occur in single-hoofed animals and occasionally in others.

One of the main causes of cramps is the disruption of stereotypical conditional reflexes, which leads to impaired control by the central nervous system. This changes the excitability of the autonomic nervous system, i.e., the excitability of the sympathetic or parasympathetic nervous systems exceeds inhibition (dysfunction). These changes mainly occur in the internal organs, namely the stomach and intestines. Causes include feeding large amounts of poor-quality feed, violation of feeding, watering, and exercise regimes, the impact of low environmental temperature, development of Delafondia parasites in the anterior mesenteric artery causing aneurysms and functional disturbances, changes in atmospheric pressure and humidity triggering visceral-visceral and sensor-visceral pathological reflexes, among others. Under the influence of these factors, motor, secretory, and absorptive functions in the stomach and intestines are reflexively disturbed, leading to strong spasms (spastic colic) in certain parts of the intestines. Disturbance of motor activity causes parts of the intestine to tense, stagnation of

food mass, intensified fermentation and gas formation. The intestinal walls stretch, irritating interoreceptors (distensional colic), mesenteric folds tighten (mesenteric colic), and receptors in the peritoneum are activated (peritoneal colic). Auto-intoxication and dehydration (dehydration) occur. Liver function is impaired. Blood thickens, blood pressure rises, acidosis, tachycardia, and shortness of breath develop. Dynamic ileus is classified as spastic or paralytic. Spastic ileus includes gastric dilation, enteralgia, and intestinal meteorism; paralytic ileus includes chyme stagnation and coprostasis.

Mechanical ileus is classified into obturational (intestinal blockage by stones, foreign objects, or parasites), strangulation (intestinal loops entering apertures, twisting, or invagination), and hemostatic (resulting from thromboembolism of intestinal arteries). Colic is always considered a serious pathological condition in horses. However, the term "colic" does not denote a specific disease, but refers to mild or severe cramping in the gastrointestinal tract. The wide variety of colic forms leads to much debate among specialists. These conditions include intestinal torsion, acute necrotic inflammations of the intestines, acute inflammations of the intestinal serous membrane, thrombosis, and embolisms in the capillaries of the mesentery, among others.

We will discuss causes, symptoms, treatment, and prevention methods of colic. There are also many myths and rumors causing unnecessary anxiety among horse owners. Not all colic leads to death; mild and moderate forms are often resolved with conservative therapy. However, severe colic can quickly lead to death if untreated. Modern veterinary medicine and clinical facilities allow up to 80% of cases, including intestinal torsion, to be treated surgically, provided that the horse is brought to the clinic within 4–6 hours from the onset of symptoms. After this period, the outcome depends on the extent of intestinal damage and intoxication levels. Upon noticing restlessness or pain in the horse, it should be given spasmolytic or analgesic medications and immediately transported to a clinic for comprehensive examination and either conservative or surgical treatment, depending on findings.

Metabolic disturbances in the blood are among the key causes of cramps. During the disease, the following biochemical changes are observed:

1. Dehydration and electrolyte imbalance:
- Fluctuations in sodium and potassium levels
- Blood thickening and increased osmotic pressure

2. Metabolic acidosis and intoxication:
- Elevated blood lactate and pyruvate levels
- Increased ammonia in the blood due to intestinal toxin buildup

3. Liver and kidney dysfunction:
- Elevated transaminases (AST, ALT)
- Increased creatinine and residual nitrogen in the blood

Types of colic and observed biochemical changes in the blood:

Spastic colic: Occurs due to impaired intestinal motility. Potassium levels increase, sodium decreases.

Paralytic colic: Associated with severe slowing of intestinal movements; toxic substances accumulate in the blood, and ammonia levels rise.

Thromboembolic colic: Caused by thrombosis or embolism of intestinal arteries; thrombin and fibrin levels in the blood increase.

Treatment methods: Considering the biochemical changes in the blood is crucial when treating colic. Treatment includes:

1. Restoring electrolyte balance with physiological and electrolyte solutions.
2. Neutralizing toxins using enterosorbents and hepatoprotectors.
3. Supporting liver and kidney function through infusion therapy and detoxification measures.
4. Reducing pain and restoring intestinal motility with spasmolytics and prokinetic drugs.
1.

Practical recommendations: At the first signs of colic in sport horses, immediately consult a veterinary specialist. Early-stage blood biochemistry analysis and individualized treatment planning are advised. To prevent colic:

- Ensure variety and quality in diet
- Monitor water consumption
- Maintain appropriate physical activity levels

Research has shown that metabolic changes occur in the blood of horses with colic, and timely detection allows effective treatment. Therefore, using biochemical analyses in veterinary practice is very important.

Conclusion

When colic signs appear in sport horses, early diagnosis and prompt veterinary care are essential. Signs indicating colic include restlessness, yawning, increased movement, rolling on the ground, kicking the abdomen with hind legs, looking at the abdomen while lying down, sweating, and breathing difficulties if untreated. In such cases, immediate veterinary attention is necessary. Preventive measures include carefully monitoring the diet's variety and nutritional value.

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