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CROATIAN ACADEMY OF SCIENCES AND ARTS

RAZRED ZA MEDICINSKE ZNANOSTI
THE DEPARTMENT OF MEDICAL SCIENCES

ODBOR ZA ANIMALNU I KOMPARATIVNU PATOLOGIJU
COMMITTEE OF ANIMAL AND COMPARATIVE PATHOLOGY

2. međunarodni veterinarski specijalistički simpozij

Hitni postupci u liječenju malih životinja

2nd International Veterinary Specialties Symposium

Emergency Treatments In Small Animals

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HRVATSKA AKADEMIJA ZNANOSTI I UMJETNOSTI

**RAZRED ZA MEDICINSKE ZNANOSTI
ODBOR ZA ANIMALNU I KOMPARATIVNU PATOLOGIJU**

PROGRAM SIMPOZIJA / CONFERENCE PROGRAM:

9:15 - 9:55 **Registracija sudionika / *Participants registration***

10:00 - 10:15 **Pozdravna riječ / *Welcome Address***

Zvonko Kusić, *President of the Croatian Academy of Sciences and Arts*

Dražen Matičić, *Chair of the Organizing Committee*

Moderators: Dražen Matičić, Boris Pirkić, Marko Stejskal

10:15 - 10:45 **Hitni postupci u veterinarskoj stomatologiji
*Emergencies In Veterinary Dentistry***

Ana Nemec, *Diplomate EVDC/AVDC, Associate Professor, Small Animal Clinic, Veterinary Faculty, University of Ljubljana, Slovenia; Associate Researcher, Department of Surgical and Radiological Sciences, School of Veterinary Medicine, University of California-Davis, USA*

10:45 - 11:15 **Hitni postupci u dermatologiji
*Emergencies In Dermatology***

Nikša Lemo, *Diplomate ECVD, Professor, Clinic for Internal Diseases, Faculty of Veterinary Medicine, University of Zagreb, Croatia*

11:15 - 11:45 **Predavanje residenta / *Resident talk*
Hitni postupci u kardiologiji
*Emergencies In Cardiology***

Marin Torti, *Resident ACVIM, Assistant Professor, Clinic for Internal Diseases Faculty of Veterinary Medicine, University of Zagreb, Croatia*

11:45 - 12:20 **Stanka / *Break***

12:20 - 12:50 **Hitna stanja u divljih životinja
*Wildlife Population Emergencies***

Dean Konjević, *Diplomate, ECZM (WPH), Associate Professor, Faculty of Veterinary Medicine, University of Zagreb, Croatia*

12:50 - 13:20 **Hitna stanja u kirurgiji- akutni abdomen**
Emergency Treatments In Surgery - Acute Abdomen In Dogs

Marko Stejskal, *Diplomate ACVS-SA/ECVS, Assistant Professor, Clinic for Surgery, Orthopaedics and Ophthalmology, Faculty of Veterinary Medicine, University of Zagreb, Croatia*

13:20 - 13:30 **Rasprava / Discussion**

SAŽETCI / ABSTRACTS

Emergencies In Veterinary Dentistry

Ana Nemec, *DVM Ph.D. DAVDC DEVDC, Associate Professor*

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Emergencies related to oral cavity and maxillofacial region are most commonly a sequel of traumatic events and may include dentoalveolar injuries, jaw fractures and soft tissue trauma.

Complicated crown fractures (dental fractures exposing the dental pulp) are the most common type of traumatic dentoalveolar injuries. Affected teeth must be treated as soon as possible, because the condition is extremely painful and also leads to infection of the pulp with subsequent necrosis and the spread of the infection into the periapical tissues. A vital pulpectomy, if indicated, is an emergency procedure, as the success rate of the treatment declines rapidly 48 hours after pulp exposure. If the total pulpectomy or tooth extraction is elected, the treatment can be postponed to the first available appointment. Traumatic dentoalveolar injuries may only involve the supporting apparatus of the tooth (periodontal trauma with or without alveolar fracture). Concussion and subluxation are rarely noticed, but luxation (lateral, intrusive or extrusive) or tooth avulsion is evident. If the client elects to preserve the tooth, luxation and avulsion cases are handled as an emergency, as periodontal ligament begins to necrotize after 60 minutes of extra-oral time. However, successful replantation of the tooth is possible even later, providing that the tooth was placed in an appropriate solution (e.g., Hank's balanced salt solution, cool low-fat milk). If the client elects to extract the tooth, the treatment can be postponed to the first available appointment. Intrusive luxation bears poor prognosis. Deciduous teeth affected by traumatic dentoalveolar injuries are extracted.

Patients suffering from jaw fractures should be treated with analgesics and temporary bone support (with muzzle) on an emergency basis. Nutritional support (e.g., esophageal tube placement) and other supportive therapy (e.g., antibiotic therapy in case of open fractures, fluid therapy) should be considered as well. Jaw fractures should then be evaluated as soon as possible with careful oral and dental examination and diagnostic imaging (preferably CT) with the patient under general anaesthesia, if/once the patient is stable. The animal should then receive definitive fracture fixation as soon as possible, as this provides the best success. Some fractures, and especially those in juvenile animals, are frequently best treated conservatively to avoid interference with the future growth of the jaws and teeth.

Soft tissue injuries of the oral cavity and face, such as lip avulsion or midline palatal fracture/separation with tearing of palatal soft tissues should be treated as soon as

possible with wound debridement and lavage, soft tissue repair as indicated, and usually systemic antibiotic support. The full extent of soft tissue necrosis resulting from chemical or electrical burns may only be visible within days of the traumatic event. A conservative approach is therefore warranted in these cases, but supportive care must be established on an emergency basis.

The inability to close or open the mouth should be addressed on an emergency basis as it is usually extremely frustrating to the animal and frequently also very painful. However, the causes for inability to close or open the mouth may vary greatly and accurate diagnosis based on clinical examination and diagnostic imaging (CT) should be established first. An inability to close the mouth may result from a maxillofacial trauma with temporomandibular joint (TMJ) luxation or open-mouth jaw locking, usually due to TMJ dysplasia. Foreign bodies, large tumors, luxated teeth, sublingual siaoloele (ranula) and trigeminal neuropathy could also result in an inability to close the mouth. The reasons for an inability to open the mouth can be related to TMJ lesions (ankylosis), masticatory myositis, severe middle ear disease, foreign bodies, tumors, retrobulbar abscesses or tetanus.

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Emergencies In Veterinary Dermatology

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Urticaria is a disease characterized by the sudden development of wheals as cutaneous signs of an anaphylactic reaction. It can start suddenly (minutes after exposure) and it can be life threatening in case that generalized or systemic signs will be present together with hives. Urticaria also can be non immunological in nature.

Angioedema is pronounced erythematous swelling of the lower dermis and subcutis with frequent involvement of the head, neck and lower extremities. It is usually an acute mast cell-mediated reaction caused by exposure to drug, venom, food or pollen. Toxic epidermal necrolysis (TEN) and Stevens-Johnson syndrome (SJS) are a delayed-type cutaneous immune reaction involving cytotoxic T-lymphocyte and natural killer cell activation. TEN/SJS are rare life-threatening skin diseases characterized by extensive destruction of the epidermis and mucosal epithelium. SJS and TEN are variants of the same disease spectrum; those are different from subsets of erythema multiforme (EM) in characteristic clinical appearance and causality. Most cases of SJS and TEN are induced by drugs, but infectious triggers dominate in EM. Cutaneous adverse drug reactions can have different clinical features then mentioned (SJS, TEN, EM, urticarial and angioedema). It can mimic nearly any dermatosis. Some patterns are more common in domestic animals and it includes maculopapular eruptions ("red rashes"), exfoliative (scaling) dermatoses, pruritus with self-induced excoriations and erythroderma

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Emergencies In Veterinary Cardiology

Stabilization Of The Congestive Heart Failure Patient In The Er

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Emergency veterinarians commonly care for canine and feline patients with congestive heart failure (CHF). Depending on the primary cause and severity of the cardiac disease, clinical signs can vary from patient to patient and are not pathognomonic for cardiovascular disease. Clinical signs in patients with CHF may include weakness and exercise intolerance, cough, lethargy, inappetence, vomiting, tachypnea, respiratory distress, syncope, or collapse. CHF is often presumptively diagnosed based on a patient's primary presenting complaints, signalment, a thorough history, and physical examination findings.

In dogs the most common cause of CHF are acquired heart diseases, in the majority of cases degenerative mitral valve disease and dilated cardiomyopathy. One must not forget that congenital heart diseases, most often patent ductus arteriosus, as well as bacterial endocarditis and myocarditis can lead to the development of CHF. Also, severe cardiopulmonary dirofilariasis or cardiac tamponade can also potentially lead to the development of CHF.

Cardiomyopathies are the far most common cause of CHF in cats. The most common form of feline cardiomyopathy is hypertrophic cardiomyopathy, followed by restrictive/unclassified cardiomyopathy, dilated cardiomyopathy, and arrhythmogenic right ventricular cardiomyopathy, the rarest form of feline cardiomyopathies. Other possible causes of CHF in cats include hyperthyroidism, myocarditis/endocarditis, and acquired valvular disease.

Generally speaking, the key elements of successful CHF patient stabilization include avoidance of stressful situations, rest, oxygen supplementation, intensive diuresis and/or paracentesis. Other possible interventions include heart rate control (usage of antiarrhythmic drugs), positive inotropic support, and antithrombotic therapy. Fluid therapy is almost never a therapeutic option in CHF patient, the only exception being severely dehydrated patient where fluids are used extremely judiciously.

Emergency stabilisation is directed toward management of congestion, and often includes oxygen therapy, minimisation of stress, and aggressive diuretic therapy. Cats in congestive heart failure often present with pleural effusion, so in cases of moderate to large volumes of pleural effusion thoracentesis is indicated. The goal of thoracentesis should not be complete removal of effusion but to relieve signs of respiratory distress. Furosemide is probably the most important drug for the management of acute CHF and currently is the diuretic of choice for management of severe pulmonary oedema

in dogs and cats. In animals with acute severe CHF, high doses of furosemide are often required, given as intravenous bolus or continuous rate infusion. The definitive dose of furosemide required by an individual animal is hard to define, but for dog doses of up to 4 mg/kg, and cat 3 mg/kg every 1-2 hours are required. Continued use of furosemide commonly causes azotaemia and electrolyte depletion (hypokalaemia).

In animals with CHF and low cardiac output, as is the case in DCM, positive inotropic support is indicated. Most commonly used drugs are dobutamine and pimobendan. Dobutamine, a sympathomimetic and β_1 receptor agonist, is most commonly given as a continuous rate infusion, because of dobutamine's short half-life. In dogs, the infusion rate is adjusted upward from 2.5 $\mu\text{g/kg/min}$ (at 2.5 $\mu\text{g/kg}$ increments) until signs of improved cardiac function are apparent (e. g. increased systemic blood pressure, warm limbs, normal CRT duration). Increases in heart rate greater than 20% above baseline or heart rates >190 bpm or occurrence of arrhythmia dictates dose reduction. Pimobendan is a calcium sensitizing drug and phosphodiesterase 3 inhibitor possessing positive inotropic and vasodilating effects. It has been studied in dogs with chronic valvular disease and dogs with dilated cardiomyopathy, where its use results in significant clinical improvement. Pimobendan is also available as solution for injection (Vetmedin[®], solution for injection, 0,75 mg/ml, Boehringer Ingelheim), and as such can be administered in emergency patients. The dosage of Vetmedin[®] solution is 0.15 mg/kg intravenously. It should be administered only once, and therapy should be continued with peroral administration of pimobendan.

In certain cases, mechanical ventilation is desirable in order to avoid respiratory muscle fatigue, and initiate positive end-expiratory pressure to help mobilize oedema while other therapies take effects.

Most animals with CHF markedly improve within 24 to 48 hours after initiation of stabilization. Hence, if improvement is not detected, both the diagnosis and current therapeutic plan should be reconsidered.

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Emergency Wildlife Care – Roe Deer Capture, Handling And First Aid

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Roe deer (*Capreolus capreolus* L.) is autochthonous game species in Croatia. In accordance with new, molecular based classification the roe deer belongs to Superorder Laurasiatheria, Order Cetartiodactyla, Suborder Ruminantia and family Cervidae. According to its anatomical characteristics it is classified as a plesiometacarpal deer. Emergency conditions in roe deer usually follow collisions with vehicles, injuries from dogs and machines, animals caught in fences or fawns that have been on its own for more than 48 hours. Wildlife-vehicle collisions (WVC) are the major safety issue that participates with 4-6% in total car accidents in Croatia. During 2007-2009, 7495 game animals were involved in WVC in Croatia, and roe deer participated with 5486 individuals. Since a wild animal is in question, before attempting to capture injured roe deer it is important to: Observe, assess, discuss, and then decide whether intervention is appropriate; Bear in mind that all wild animals can potentially transmit diseases and inflict serious injuries and roe deer is not an exception; Consider that practitioner safety should be of paramount importance. It is very important to assess the condition of the deer very carefully before choosing a capture and restraint plan, or other procedures. Following WVC majority of animals will be seriously injured with diagnosis that range from spinal fractures and dislocations, pelvic fractures (especially in females due to the risk of dystocia), and long bone fractures which are compound and/or contaminated. These animals should be euthanized as soon as possible to prevent further suffering. In order to approach the animal, sedation or chemical immobilization is often required (caution is needed when applying chemical immobilization in wildlife). Drugs needed, solely or in combination are ketamine, diazepam, tiletamine-zolazepam and suitable alpha-2 adrenergic agonist sedative like xylazine, detomidine or medetomidine. The reversal can be achieved by atipamezole. Drugs can be administered using special sticks, blow-pipes or dart guns. During procedure always cover the roe deer head with a towel or similar, in order to reduce external stimuli to animal. This is of particular importance since deer are easily stressed, can quickly go into a shock, and are candidates for non-infectious condition called capture myopathy. In cases when animal is already in shock, sedation is contraindicated. During immobilization animals must be maintained in sternal recumbency (to allow regurgitation and normal breathing) with the head supported upright to prevent gastric reflux, or if not possible, then in right lateral position. In case of WVC, first aid include shock treatment: warmth (warm slowly), administration of fluids (i/v), oxygen if required, to ensure calm, dark and warm environment. Fracture treatment depends on fracture position and type of fracture, bearing in mind large recovery potential in wild animals. Prolonged periods in captivity

are often contraindicated due to the stress involved and the possibility of inflicting self-injuries.

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Emergencies In Veterinary Surgery

Acute Abdomen In Dogs

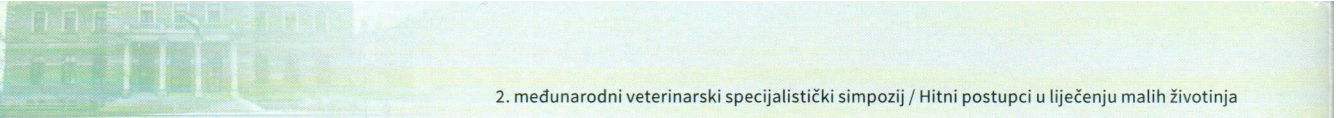
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Acute abdomen refers to the acute onset of abdominal pain. The underlying etiology may be immediately life threatening. This presentation will address rapid identification of the underlying etiology and the problem-oriented approach to treatment. The numerous etiologies of acute abdomen include disease or injury of the gastrointestinal, hepatobiliary, urogenital, hemolymphatic (spleen), pancreatic, and vascular system, peritoneum, body wall, or may be related to referred pain. The diagnostic process includes medical history, physical examination, diagnostic imaging, abdominal fluid analysis, laboratory workup, and exploratory abdominal surgery as the ultimate diagnostic and therapeutic intervention. If surgery is warranted, it needs to be timed to decrease further morbidity and maximize survival. Indications for surgery include septic peritonitis, pneumoperitoneum, decompensatory shock unresponsive to medical therapy, and worsening hemoabdomen. Surgical emergencies include gastric dilatation-volvulus, penetrating abdominal wounds, mesenteric torsion, pyometra, gastrointestinal obstruction, ruptured abdominal masses, and intractable abdominal hemorrhage. The focus of the presentation will be on the indications for surgery and surgical aspects of the treatment of dogs with acute abdomen.

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