

UNIVERZITET U SARAJEVU - VETERINARSKI FAKULTET



Sedacija i anestezija urgentno traumatiziranih pasa: izbor protokola u zavisnosti od hemodinamske stabilnosti pacijenta

Završni rad

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**Sedation and Anesthesia of Urgently Traumatized Dogs: Protocol
Selection According to the Patient's Hemodynamic Stability**

Diploma Thesis

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SAŽETAK

Trauma predstavlja jedno od najzahtjevnijih stanja u veterinarskoj urgentnoj medicini, posebno kada je praćena hemodinamskom nestabilnošću, hipovolemijom, respiratornim kompromisom ili povredama više organskih sistema. Primjena sedacije i anestezije kod traumatiziranih pasa zahtijeva individualiziran pristup zbog mogućnosti da anestetički agensi dodatno naruše već kompromitirane fiziološke funkcije. Cilj ovog završnog rada bio je prikazati i analizirati principe sedacije i anestezije urgentno traumatiziranih pasa, sa posebnim osvrtom na izbor anesteziološkog protokola u zavisnosti od hemodinamske stabilnosti pacijenta. U radu su razmotrene osnovne karakteristike traumatiziranog psa kao anesteziološkog pacijenta, najčešće vrste trauma i posebnosti politraume, kao i postupci inicijalne procjene i stabilizacije. Posebna pažnja posvećena je procjeni hemodinamskog statusa, prepoznavanju hipovolemije i šoka te razlikovanju hemodinamski stabilnog od nestabilnog pacijenta. Analiziran je značaj sistematskog pristupa u inicijalnom zbrinjavanju, uključujući procjenu disajnog puta, disanja i cirkulacije, kao i potrebu za pravovremenom oksigenacijom, uspostavljanjem intravenskog pristupa, fluidnom terapijom i kontrolom tjelesne temperature. U radu su također prikazane mogućnosti primjene različitih sedativnih i anestetičkih agenasa, uključujući propofol, alfaksalon, ketamin, benzodiazepine i inhalacione anestetike. Posebno je razmotren značaj multimodalne analgezije i balansirane anestezije, kojima se nastoji postići adekvatna kontrola bola i anestezije uz smanjenje potrebe za većim dozama pojedinačnih anestetika. Poređenjem različitih pristupa ukazano je na značaj prilagođavanja izbora lijekova fiziološkom stanju pacijenta, naročito kod hipovolemije, hipotenzije i politraume. Poseban dio rada posvećen je monitoringu tokom anestezije i prepoznavanju najčešćih komplikacija, među kojima se izdvajaju hipotenzija, hipoventilacija, hipoksemija, hipotermija i poremećaji srčanog ritma. Razmatran je i značaj postanestezičkog nadzora, s obzirom na to da se komplikacije mogu javiti i nakon završetka hirurškog zahvata. Na osnovu analize dostupne literature može se zaključiti da ne postoji univerzalni anesteziološki protokol primjenjiv na sve traumatizirane pse. Izbor anestezije treba zasnivati na individualnoj procjeni pacijenta, stepenu hemodinamske stabilnosti, vrsti i težini traume, prisustvu bola i funkcionalnom statusu vitalnih organa. Kontinuirani monitoring, adekvatna analgezija, pažljiva titracija anestetika i pravovremena korekcija fizioloških poremećaja predstavljaju osnovne elemente sigurnog anesteziološkog zbrinjavanja traumatiziranih pasa.

Ključne riječi: pas, trauma, anestezija, hemodinamska stabilnost, analgezija.

SUMMARY

Trauma represents one of the most challenging conditions in small animal emergency medicine, particularly when associated with hemodynamic instability, hypovolemia, respiratory compromise, or injuries involving multiple organ systems. Sedation and anesthesia in traumatized dogs require an individualized approach because anesthetic agents may further compromise physiological functions that are already impaired by the trauma. The aim of this thesis was to present and analyze the principles of sedation and anesthesia in emergency traumatized dogs, with particular emphasis on the selection of an anesthetic protocol according to the patient's hemodynamic stability. The thesis discusses the main characteristics of the traumatized dog as an anesthetic patient, the most common types of trauma and the specific challenges associated with polytrauma, as well as the principles of initial assessment and stabilization. Particular attention was given to the assessment of hemodynamic status, recognition of hypovolemia and shock, and differentiation between hemodynamically stable and unstable patients. The importance of a systematic approach to initial emergency management was analyzed, including assessment of the airway, breathing and circulation, as well as the need for timely oxygen supplementation, establishment of intravenous access, fluid therapy, and maintenance of body temperature. Different sedative and anesthetic agents were also considered, including propofol, alfaxalone, ketamine, benzodiazepines, and inhalational anesthetics. Particular emphasis was placed on the importance of multimodal analgesia and balanced anesthesia, which aim to provide adequate analgesia and anesthesia while reducing the need for higher doses of individual anesthetic agents. Comparison of different approaches demonstrated the importance of adapting drug selection to the patient's physiological condition, especially in cases of hypovolemia, hypotension, and polytrauma. Another important aspect of the thesis was intraoperative monitoring and recognition of the most common anesthetic complications, including hypotension, hypoventilation, hypoxemia, hypothermia, and cardiac rhythm disturbances. The importance of post-anesthetic monitoring was also considered, since complications associated with anesthesia may occur after completion of the surgical procedure. Based on the analysis of the available literature, it can be concluded that there is no universal anesthetic protocol applicable to all traumatized dogs. Anesthetic management should be based on an individual assessment of the patient, the degree of hemodynamic stability, the type and severity of trauma, the intensity of pain, and the functional status of vital organs. Continuous monitoring, adequate analgesia, careful titration of anesthetic agents, and timely X

correction of physiological abnormalities represent the main principles of safe anesthetic management in traumatized dogs.

Keywords: dog, trauma, anesthesia, hemodynamic stability, analges