Lecture summaries

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Macrocirculation and microcirculation - Physiology, assessment and treatments

This lecture will review the normal anatomy and physiology of the microcirculation, its importance, and its relationship to the macrocirculation. It will explain how the body controls microcirculatory perfusion and how veterinarians can assess it, both directly or indirectly. Derangements of the microcirculation will be discussed and correlated with our understanding of the pathophysiology of critical illness. Methods for evaluating the microcirculation for prognosis and to adjust treatment goals will also be presented.

Learning goals

1. Understand the physiology of the macro- and microcirculation
2. Recognize the regulatory mechanisms that control blood flow
3. Use clinical tools to assess macro- and microcirculatory blood flow
4. Identify common microcirculatory derangements
5. Integrate the above information for application to clinical patients

Wet or Dry-How Not to Die

This lecture will provide a brief review of the compartmentalization of fluids in the body and the distribution of intravenous fluids, both in health and disease. Assessment of volume status and evidence-based fluid resuscitation and de-escalation guidelines will be discussed. Recommendations for formulating a fluid therapy plan to provide adequate, but not excessive, fluid volumes to critically ill patients will be presented. An overview of the potential complications of fluid therapy will be reviewed.

Learning goals

1. Understand the physiology of fluids within the body and distribution following intravenous fluid administration in health and disease
2. Assess volume status in a critically ill patient and understand the goals of resuscitation
3. Formulate a fluid plan to follow resuscitation and prevent volume overload
4. Accelerate removal and discontinuation of fluid therapy appropriately.
5. Understand the potential complications of fluid therapy.

Management of Multiple Organ Dysfunction Syndrome

This lecture will review the pathophysiology of multiple organ dysfunction syndrome and clinical risk factors for its development. Recognition and rapid treatment of patients suffering from multiple organ dysfunction syndrome is vital for success and will be discussed. Clinical management and treatment strategies for these patients will be presented, along with a case example, to review the main concepts.

Learning goals

1. Understand the definition and pathophysiology of MODS
2. Identify patients at high risk for MODS
3. Diagnose MODS in a clinical patient
4. Manage patients with MODS to maximize recovery and survival

ARDS Treatment (panel)

Acute Respiratory Distress Syndrome (ARDS) is associated with high morbidity and mortality in veterinary patients, yet treatment remains largely supportive and extrapolated from human critical care literature. While updated ARDSVet definitions provide a standardized framework for diagnosis and severity classification, they intentionally stop short of prescribing specific therapies.

This panel discussion explores contemporary treatment strategies for ARDS in small and large animal patients, including oxygen supplementation, high-flow nasal oxygen, mechanical ventilation approaches, and adjunctive medical therapies.

Emphasis is placed on physiologic rationale, evidence limitations, resource variability, and real-world decision-making across disease stages. Through expert discussion and case-based perspectives, this session aims to clarify what is known, what remains uncertain, and how clinicians can thoughtfully tailor ARDS management to individual patients under variable clinical circumstances and resource availability.

Learning goals

By the end of this session, participants will be able to:

1. Describe the primary goals of ARDS treatment, emphasizing supportive care rather than disease-specific cure and management of underlying predisposing diseases.
2. Compare oxygen delivery strategies (conventional oxygen, HFNO, mechanical ventilation) and identify appropriate escalation points in small animals vs large animals
3. Recognize the risks and limitations of mechanical ventilation in veterinary ARDS patients.
4. Identify commonly used adjunctive therapies extrapolated from human medicine and articulate their proposed rationale and evidence limitations.