

Function of Central and Peripheral Nervous Systems

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Introduction

A comprehensive neurologic assessment is essential in exotic animals to evaluate the function of the central and peripheral nervous systems. The assessment should involve a detailed history, thorough physical examination, and targeted neurologic examination. Gathering information about the animal's environment, behavior, and previous medical conditions is crucial. This includes information on housing, diet, exposure to toxins or trauma, recent illnesses, and changes in behavior. A complete physical examination is necessary to assess overall health and identify any concurrent medical conditions. It involves assessing vital signs, body condition, hydration status and evaluating specific organ systems, including the cardiovascular, respiratory and gastrointestinal systems. The neurologic examination focuses on assessing the animal's mental status, cranial nerve function, posture and gait, spinal reflexes and sensory and motor function. Species-specific variations and adaptations must be considered when interpreting examination findings. Radiography, computed tomography and magnetic resonance imaging can provide valuable information about the nervous system, including the brain, spinal cord and associated structures. However, access to these imaging modalities may be limited in certain exotic species. CSF analysis can be performed to assess the inflammatory, infectious, or neoplastic processes involving the central nervous system. It can aid in the diagnosis of conditions such as meningitis, encephalitis, and neoplasia.

Description

Electroencephalography and electromyography can provide insights into brain activity and peripheral nerve function, respectively. These techniques may be useful in diagnosing seizure disorders, neuromuscular diseases and certain nerve injuries. Routine blood work, including a complete blood count, serum biochemistry profile and coagulation panel, can help identify underlying systemic diseases or metabolic abnormalities that may contribute to neurologic dysfunction. Management and critical care strategies for exotic animals with neurologic disorders require a tailored approach based on the underlying condition, species and individual patient needs. Providing appropriate supportive care is vital in stabilizing the animal's condition and optimizing recovery. This may involve ensuring a quiet and stress-free environment, maintaining hydration and nutrition, managing pain and addressing any concurrent medical conditions. Pharmacological management may include the use of anti-inflammatory drugs, antiepileptic medications, analgesics and supportive therapies to control symptoms and mitigate disease progression. However, dosages, routes of administration and potential side effects should be carefully considered based on species-specific information and drug pharmacokinetics. The field of exotic animal medicine encompasses a diverse

range of species, each with unique anatomical, physiological, and behavioral characteristics [1].

For animals experiencing neurologic deficits, rehabilitation and physical therapy can help improve motor function, enhance muscle strength, and promote overall recovery. Techniques such as hydrotherapy, therapeutic exercises, and environmental modifications may be utilized. Depending on the underlying condition, some exotic animals with neurologic disorders may require ongoing management and monitoring. Regular follow-up examinations, diagnostic imaging, and adjustments to treatment plans should be implemented as necessary. Neurologic assessment and critical care of exotic animals present unique challenges for veterinarians. A thorough history, physical examination and neurologic assessment are essential components of diagnosing and managing neurologic disorders in exotic species. Diagnostic techniques, including imaging, CSF analysis and electrodiagnostics, can aid in the identification of underlying conditions. The management and critical care strategies should be tailored to the species-specific needs, underlying condition, and individual patient requirements. By applying a comprehensive approach and considering the specific adaptations and characteristics of exotic animals, veterinarians can optimize the neurologic assessment and critical care of these unique patients, leading to improved outcomes and quality of life [2].

Neurologic disorders can affect a wide range of exotic animals, including birds, reptiles, small mammals, and non-human primates. The assessment and critical care of neurologic cases in these species pose unique challenges due to their anatomical, physiological, and behavioral differences. This article provides an overview of the approach to neurologic assessment and critical care of exotic animals, highlighting the key considerations and techniques necessary for accurate diagnosis and appropriate management. Before undertaking a neurologic assessment, it is essential to have a solid understanding of the neuroanatomy and physiology of the specific exotic species being evaluated. Different species may have distinct neurologic structures, functions, and adaptations. For example, avian and reptilian neuroanatomy differs significantly from that of mammals, and understanding these differences is crucial for accurate interpretation of clinical signs and test results. Neurologic assessment in exotic animals follows a systematic approach similar to that used in domestic species. The evaluation should include a thorough history, physical examination, neurologic examination, and ancillary diagnostic tests. Obtaining a detailed history from the owner or caretaker is essential. Information regarding the onset and progression of neurologic signs, any potential exposures or trauma, changes in behavior, and other relevant medical history can provide valuable clues to the underlying condition [3].

A comprehensive physical examination should be performed to assess overall health and identify any concurrent medical issues that may contribute to neurologic signs. This includes evaluating vital signs, body condition, musculoskeletal abnormalities, and systemic abnormalities. The neurologic examination focuses on assessing the animal's mental status, cranial nerves, posture, gait, coordination, and spinal reflexes. However, it is important to consider species-specific variations in normal neurologic function. For example, birds do not have a menace response or facial sensation, and reptiles have different motor patterns and responses compared to mammals. Ancillary diagnostic tests are crucial for diagnosing and characterizing neurologic disorders. These may include bloodwork, cerebrospinal fluid analysis, imaging. The management of neurologic cases in exotic animals requires a multidisciplinary approach involving veterinarians with expertise in neurology, critical care, and the specific species being treated. The primary

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goals of management include stabilizing the animal, providing supportive care, identifying and treating the underlying cause, and managing neurologic complications. This article aims to provide an approach to the neurologic assessment and critical care of exotic animals, emphasizing the importance of a thorough examination, diagnostic techniques, and management strategies tailored to each species' specific needs [4].

Depending on the severity of the neurologic signs, immediate stabilization may be necessary. This may involve providing supplemental oxygen, maintaining body temperature, administering fluid therapy, and addressing any concurrent medical issues that could exacerbate neurologic signs. Supportive care is crucial for ensuring the animal's overall well-being and optimizing neurologic recovery. This may include providing appropriate analgesia, nutritional support, physical therapy, and environmental modifications to minimize stress and facilitate healing. Accurate diagnosis and targeted treatment of the underlying cause are essential for successful management of neurologic cases. Treatment options may include medical management, surgical intervention, or supportive care for irreversible neurologic conditions. Neurologic disorders can have secondary complications that require specific management. Examples include seizures, increased intracranial pressure and respiratory compromise. Identifying and managing these complications promptly is crucial for optimizing patient outcomes. When it comes to the neurologic assessment and critical care of exotic animals, veterinarians face specific challenges due to limited diagnostic tools, scarce reference values, and a relatively limited understanding of neurologic disorders in these species [5].

Conclusion

Each exotic species has its own unique considerations when it comes to neurologic assessment and critical care. Avian and reptile neurology, for example, have specific nuances and require specialized approaches to diagnostics and treatment. Small mammals, such as rabbits and rodents, may have different responses to medications and require tailored anesthetic protocols. Non-human primates have complex social structures and behavioral considerations that need to be taken into account during evaluation and management. Understanding these species-specific considerations is essential for providing effective care. The assessment and critical care of neurologic cases in exotic animals require a systematic approach, taking into account the specific neuroanatomy, physiology, and behaviors of each species. A thorough neurologic assessment, including a detailed history, physical examination, and appropriate diagnostic tests, is crucial for accurate diagnosis and treatment. The multidisciplinary management of neurologic cases involves stabilizing

the animal, providing supportive care, identifying and treating the underlying cause, and managing neurologic complications. By applying a comprehensive approach and considering species-specific considerations, veterinarians can optimize patient care and improve neurologic outcomes in exotic animal species. This may involve further diagnostic testing, such as advanced imaging or referral to a specialist, to obtain a definitive diagnosis.

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Conflict of Interest

None.

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