Autumn P. Davidson

Clinically Relevant Physiology of the Neonate
Sophie A. Grundy

During the 4- to 6-week neonatal period (birth to weaning), the physiology of canine and feline neonates undergoes dramatic change. Despite the neonate having the appearance of a miniature adult, their unique physiology has a significant impact on physical examination and laboratory test interpretation and may limit diagnostic capabilities and therapeutic options. In this article, the most striking physiologic differences between neonatal and adult body systems are discussed with respect to the resulting clinical implications.

Danika L. Bannasch and Angela M. Hughes

Recent Advances in Small Animal Genetics

The whole genome sequence of the dog is complete, and partial sequencing of the cat genome is underway. Sequences allow the molecular basis for inherited diseases to be more easily determined, leading to development of DNA tests to verify carrier and affected states as well as potential gene therapy for the treatment of those diseases. To help veterinarians provide genetic services to their clients, the molecular genetic tests currently available are listed in this article. In addition, cloning of small animals is now available to clients on a commercial basis. Information about the cloning process and possible health issues in clones are discussed.

James A. Lavely

Pediatric Neurology of the Dog and Cat

The neurologic examination in the puppy or kitten can be a challenging experience. Understanding the development of behavior reflexes and movement in puppies and kittens enables us to overcome some of these challenges and to recognize the neurologically abnormal patient. Subsequently, we can identify the neuroanatomic localization and generate a differential diagnosis list. This article first reviews the pediatric neurologic examination and then discusses diseases unique to these individuals.
Congenital Heart Diseases of Puppies and Kittens 503
Kristin A. MacDonald

Congenital heart disease (CHD) is defined as a morphologic defect of the heart or associated great vessels present at birth. Abnormalities are caused by alterations or arrests in particular phases of embryonic development of the fetal heart. The term congenital does not imply that the defect was inherited, and the defect may have occurred spontaneously or secondary to a drug or toxin. By studying families of animals with specific CHDs, many defects have also been shown to be heritable. Additionally, if the defect was caused by a spontaneous de novo mutation, that individual has the potential to transmit the mutation to offspring. The diagnosis of CHD is important not only to the health of the patient but to eliminate affected individuals from the breeding pool.

Selected Topics in Pediatric Gastroenterology 533
Michael L. Magne

This article discusses some of the more common gastrointestinal problems encountered in pediatric patients. Topics include infectious and endoparasitic disorders, congenital esophageal and hepatic disorders, and acute or chronic intestinal diseases. Diagnostic criteria as well as treatment guidelines are presented.

Pediatric Endocrinology 549
Deborah S. Greco

Endocrine and metabolic disorders affecting puppies and kittens from birth until 6 months of age may manifest as clinical problems related to growth or to water metabolism (polydipsia and polyuria). Most commonly, endocrine and metabolic disorders affect growth of the animal, and puppies are often presented to the veterinarian for assessment of delayed or aberrant growth. Other endocrine disorders of small animals, such as juvenile-onset diabetes insipidus or diabetes mellitus, affect water metabolism, resulting in excessive thirst and urination and resultant difficulty in house-breaking.

Topics in Pediatric Dermatology 557
Terry Nagle

Skin conditions of puppies and kittens are often infectious, such as ectoparasites or dermatophytosis. Hereditary and congenital skin problems are often detected at an early age. Young animals may be more prone to toxicity from medications, and labels should be read carefully for age limits. Husbandry factors, including nutrition, ectoparasites, temperature and humidity, cleaning products, and bedding, should be considered. Fleas are still a common problem despite recent improvements in flea control and can be debilitating in young animals because of blood loss.
Disorders of Sexual Differentiation in Puppies and Kittens: A Diagnostic and Clinical Approach

Stefano Romagnoli and Donald H. Schlafer

As in all domestic mammals, sexual differentiation in dogs and cats starts early in the embryonic period prenatally and continues into early postnatal life. The result of such a process is, however, not evident until after puberty, a time when the entire reproductive system undergoes significant changes. Normality of sexual differentiation is difficult to observe in neonates of small animals, with the only gender difference being a slightly longer anogenital distance in male (13–15 mm) versus female (7–8 mm) animals. Early diagnosis of deviations from normality can spare breeders the time and effort devoted to raising an animal that may turn out to be unsuitable for becoming part of the reproductive stock and may spare owners the concern for a pet whose health may be unnecessarily threatened by failing to remove a malformed reproductive system early in life. This article reviews the incidence, clinical and gross anatomic features, and diagnostic approaches that veterinarians can use to address inborn errors of the reproductive system of dogs and cats, highlighting those malformations that bear clinical relevance and may become manifest from birth until puberty.

Current Vaccination Strategies in Puppies and Kittens

Gina M. Davis-Wurzler

Motivation in writing this article stems from many things: a lack of time spent in the veterinary curriculum discussing vaccines, a growing concern (by the general public and the veterinary community) regarding adverse reactions associated with vaccines, and a desire to prevent a recurrence of preventable infectious diseases resulting from a fear-driven cessation of vaccine administration. The objectives of this article are to present a basic review of immunology as related to vaccines, to discuss general guidelines for pediatric vaccines in canine and feline patients, and to offer suggestions as to how we can most positively influence our patients’ health from the first visit.

Pediatric Abdominal Ultrasonography

Tomas W. Baker and Autumn P. Davidson

Pediatric patients are commonly presented to the veterinarian because of signs referable to the abdominal cavity caused by congenital anomalies, dietary indiscretion, parasitic infestation, and infectious disease. Abdominal ultrasound provides valuable clinical information about the peritoneal cavity, great vessels, abdominal viscera, and lymph nodes, which is obtained in a noninvasive fashion and usually does not necessitate sedation or anesthesia. Ultrasonography thus greatly facilitates
diagnostic evaluation of the pediatric patient. Ultrasound equipment already in place in many small animal veterinary clinics is appropriate for most pediatric cases.