



Infantile Hemangiomas: From Pathogenesis to Personalized Care

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DESCRIPTION

Infantile hemangiomas are common vascular tumors affecting infants, characterized by their dynamic growth and spontaneous involution. These benign tumors arise from endothelial cells and typically manifest within the first few weeks to months of life. Infantile hemangiomas exhibit a characteristic growth pattern: an initial proliferative phase followed by a slower involution phase. The clinical presentation varies widely, ranging from superficial, well-circumscribed lesions to deep-seated or mixed subtypes that can involve vital structures and pose functional or cosmetic concerns. Diagnosis is primarily clinical, relying on characteristic findings such as rapid growth, bright red coloration, and a well-defined border. While most infantile hemangiomas do not require intervention due to their natural history of regression, certain cases may necessitate treatment to prevent complications such as ulceration, vision obstruction, or airway compromise. Propranolol, a non-selective beta-blocker, has revolutionized the management of problematic hemangiomas, promoting accelerated involution and reducing the need for surgical intervention. Other therapeutic modalities include topical or intralesional corticosteroids, laser therapy, and surgical excision for lesions resistant to medical treatment or causing significant impairment. Ongoing research aims to elucidate the underlying pathophysiology of infantile hemangiomas, identify biomarkers predictive of treatment response, and refine therapeutic strategies to optimize outcomes while minimizing potential adverse effects. A multidisciplinary approach involving dermatologists, pediatricians, surgeons, and other specialists ensures comprehensive care, addressing both medical needs and the psychosocial impact on affected infants and their families. As our understanding of infantile hemangiomas continues to evolve, collaborative efforts in research and clinical practice are essential to advance diagnostic precision and therapeutic efficacy, ultimately improving the quality of life for infants affected by these vascular tumors. Infantile hemangiomas represent a common and dynamic challenge in pediatric dermatology, characterized by their unique growth patterns and clinical implications. These benign vascular tumors, arising from endothelial cells, typically appear shortly after birth and undergo distinct phases of development. The initial proliferative phase involves rapid growth, often followed by a

stabilization period and eventually a phase of spontaneous involution. The clinical presentation can vary widely, from superficial, raised lesions to deep-seated or mixed forms that may involve critical structures like the airway, eyes, or internal organs. In addition to propranolol, other treatment modalities are available depending on the hemangioma's size, location, and clinical course. Corticosteroids, either topical, intralesional, or systemic, remain a standard treatment for certain cases, particularly when initiated early in the proliferative phase. Laser therapy is another valuable tool, especially for superficial or ulcerated hemangiomas, providing targeted treatment while minimizing damage to surrounding tissues. Surgical excision is reserved for specific indications, such as large or deeply infiltrating lesions that do not respond adequately to medical therapies. The management of infantile hemangiomas also underscores the importance of a multidisciplinary approach involving dermatologists, pediatricians, ophthalmologists, otolaryngologists, and other specialists. Collaborative care ensures comprehensive evaluation, personalized treatment plans, and ongoing monitoring to optimize outcomes and minimize long-term sequelae. Moreover, supporting families through education, counseling, and access to support networks is crucial in navigating the emotional and practical challenges associated with hemangioma diagnosis and management. Looking forward, the field of pediatric dermatology continues to evolve with advancements in treatment strategies and multidisciplinary collaborations. As research progresses, the goal is to refine existing therapies, explore novel treatment modalities, and improve predictive models to tailor interventions more precisely to each patient's needs. By integrating clinical expertise with cutting-edge research, pediatric dermatologists are poised to enhance the care and quality of life for infants affected by infantile hemangiomas, ensuring that they receive the best possible outcomes from infancy through childhood and beyond.

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CONFLICT OF INTEREST

The author's declared that they have no conflict of interest.

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