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Operative treatment of a complex intercostal arteriovenous malformation

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Title: Operative Management of a Complicated Intercostal Arteriovenous Malformation in a Pediatric Patient: A case report

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Abstract

Arteriovenous malformations (AVMs) are rare lesions that may mimic giant hemangiomas. The most common location is the head and neck region, although very few reports of thoracic AVMs have been described. These lesions grow through childhood and adulthood and can lead to serious complications, such as tissue ischemia, ulceration, and bleeding. Magnetic Resonance Imaging (MRI) and angiography (MRA) are useful to assess extent of lesion. Treatment most commonly consists of embolization alone or in combination with surgical excision. In this report, we present a 7-year-old girl with a giant intercostal AVM of the right chest wall, including rib cage and intercostal spaces with overlying muscle involvement. The treatment approach was embolization followed by surgical resection and reconstruction of the chest wall. There were no complications in the postoperative period and the patient was discharged with minimal compensatory scoliosis and no functional impairment.

Keywords: arteriovenous-malformation, embolization, angiography and MRI.

Introduction

Congenital vascular anomalies include a broad spectrum of lesions with dissimilar pathophysiology and clinical behavior. Vascular malformations are due to errors in vascular morphogenesis. Arteriovenous malformations (AVMs) are congenital high flow vascular lesions composed of anomalous capillary beds associated with variable degrees of arteriovenous shunting. They present themselves at birth and slowly grow throughout the course of a patient's life. Hemangiomas, in contrast, are the most common tumors in infancy. They usually arise in the head and neck region and can be superficial, deep, or of combined nature. They consist of rapidly dividing endothelial cells and present early in life, most commonly at birth or in the first weeks of life (1).

AVMs demonstrate an infiltrative and destructive nature, and almost all of these lesions eventually require surgical intervention. They are classified in four stages: quiescence, expansion, destruction and decompensation (2). Hemangiomas have a proliferative phase during the first year of life, followed with a quiescence stage and then an involuting phase during the first decade of life, most commonly before five years of age. These lesions grow within a definite anatomic region and are not usually destructive in nature, like AVMs(1)(3). The most common region of AVMs is in the head and neck, however vascular tumors in the chest are so rare that little information regarding their incidence and prevalence is accessible in the literature (4). These anomalies may cause fatal problems such as hemorrhage and congestive heart failure.