Hyperleukocytosis

Hyperleukocytosis, which is defined as a peripheral white blood cell count greater than 100,000/mm^3, can lead to capillary obstruction, microinfarction, and organ dysfunction. Children often experience respiratory distress and cyanosis. They also experience neurologic changes, including altered level of consciousness, visual disturbances, agitation, confusion, ataxia, and delirium. Management consists of rapid cytoreduction by chemotherapy, hydration, urinary alkalinization, and allopurinol. Leukapheresis or exchange transfusion may be necessary.

Superior Vena Cava Syndrome

Space-occupying lesions located in the chest, especially from Hodgkin disease and NHL, may cause superior vena cava syndrome (SVCS), leading to airway compromise and potentially to respiratory failure. Children are initially seen with cyanosis of the face, neck, and upper chest; facial and upper extremity edema; and distended neck and chest veins. They may be anxious and have dyspnea, wheezing, or a frequent cough from airway obstruction. Management consists of airway protection and alleviation of respiratory distress. Rapid treatment is initiated, and symptoms typically improve as the disease is effectively treated.

Spinal Cord Compression

Different malignancies can invade or impinge on the spinal cord, causing acute symptoms of cord compression. Children with primary CNS tumors can have tumors that originate or spread to the spinal cord. Other solid tumors, like neuroblastoma or rhabdomyosarcoma, can metastasize to the spinal cord and cause compression. Back pain is a common initial manifestation, but other symptoms can include sensation change, extremity weakness, loss of bowel and bladder function, and respiratory insufficiency. Careful physical examination is essential in early detection of symptoms, and MRI is the gold standard for diagnosis (McCurdy and Shanholtz, 2012). Treatment may include high-dose steroids to reduce associated edema and alleviate symptoms and rapid initiation of treatment such as emergent radiation or laminectomy if indicated.