

## ABSTRACT

Semin Thromb Hemost. 2021 Oct 8. doi: 10.1055/s-0041-1733959. Online ahead of print.

Venous Thromboembolism Risk and Thromboprophylaxis in Pediatric Neurosurgery and Spinal Injury: Current Trends and Literature Review.

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Although the entities of venous thromboembolism (VTE), deep venous thrombosis, pulmonary embolus, and thromboprophylaxis in adult patients undergoing brain tumor and spine surgery, traumatic brain injury and elective neurosurgical procedures are widely elucidated, the same is not valid when pediatric patients are under consideration. An attempt to review the peculiarities of these patients through a comprehensive bibliographic review is undertaken. We performed a narrative summary of the relevant literature dedicated to pediatric patients, centered on traumatic brain injury, the general incidence of thromboembolic disease in this patient population, the role of low molecular weight heparin (LMWH) in the treatment and prophylaxis of VTE, and its role in elective neurosurgical procedures, including spinal operations. Additionally, the risk of deep venous thrombosis in elective neurosurgical procedures is reviewed. Due to inherent limitations of the current studies, particularly a restricted number of patients, our data are underpowered to give a definitive protocol and guidelines for all the affected patients. Our current conclusions, based only on pediatric patients, argue that there is limited risk of VTE in pediatric patients suffering from brain tumors and that the possibility of VTE is very low in children undergoing elective neurosurgical procedures. There is no consensus regarding the exact incidence of VTE in traumatic brain injury patients. LMWH seems to be a safe and effective choice for the "at risk" pediatric patient population defined as being older than 15 years, venous catheterization, nonaccidental trauma, increased length of hospital stays, orthopaedic (including spinal) surgery, and cranial surgery.

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DOI: 10.1055/s-0041-1733959

PMID: 34624914

Conflict of interest statement: None declared.