

Pulmonary embolism risk factors

Post-op PE generally occurs 10–14 days following surgery ¹⁾. The reported incidence ²⁾ ranges from 0.4–5%. A series (on a service with routine use of elastic stockings and, in high risk patients, “minidose” heparin) found a post-op incidence of $\approx 0.4\%$, with a doubling of this number if only patients with major pathology (brain tumor, head trauma, or cerebrovascular or spinal pathology) were considered ³⁾. (another series dealing only with brain tumors found a 4% incidence ⁴⁾).

Primary brain tumors are associated with an increased risk of pulmonary embolism (PE), particularly in the early post-operative period. The pathophysiological mechanisms of PE are poorly understood. A study aimed to describe prospectively extracellular vesicles (EVs) levels and investigate whether or not their variations allow to identify patients at increased risk of post-operative PE. Consecutive meningioma or glioma patients candidate to tumor resection were included in the study if a pulmonary perfusion scan (V/Q scan) performed before surgery ruled out PE. EVs derived from platelets (CD41+) or endothelial cells (CD144+), tissue factor-bearing EVs (CD142+) and their procoagulant subtype (annexin V+) were analyzed by flow cytometry before surgery (T0), within 24 h (T1), two (T2) and seven days (T7) after surgery. Q-scan was repeated at T2. Ninety-three patients with meningioma, 59 with glioma and 76 healthy controls were included in the study. CD142+ and annexin V+/CD142+ EVs were increased at T0 in meningioma and glioma patients compared to healthy controls. Twenty-nine meningioma (32%) and 16 glioma patients (27%) developed PE at T2. EVs levels were similar in meningioma patients with or without PE, whereas annexin V+ and annexin V+/CD142+ EVs were significantly higher at T1 and T2 in glioma patients with PE than in those without. Procoagulant EVs, particularly annexin V+/CD142+, increase after surgery and are more prevalent in glioma patients who developed PE after surgery than in those who did not ⁵⁾.

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