D-dimer

A normal D-dimer is considered less than 0.50. A positive D-dimer is 0.50 or greater.

D-dimer (a specific fibrin degradation product): high levels are associated with Deep-vein thrombosis and Pulmonary Embolism. [1)]

A negative D-dimer test reliably excludes PE in patients with a low clinical probability of PE [2)] or in those with nondiagnostic Ventilation/perfusion scan [3)].

D-dimer showed a sensitivity of 97.1%, specificity of 91.2%, a negative predictive value of 99.6%, and a positive predictive value of 55.7% for cerebral venous sinus thrombosis [4)].

A normal D-dimer level by a sensitive radioimmunoassay or ELISA may help identify patients with a low probability of CVT (Level II [5)].

Okamoto et al. investigated the appropriate D-dimer cutoff value for each brain tumor type for acute or subacute Deep-Vein Thrombosis (DVT) following transcranial brain tumor surgery. In this single-center retrospective study, a cumulative total of 128 patients who underwent transcranial brain tumor surgery were enrolled and classified into the glioma group, the other intracranial malignant tumor group, and the intracranial benign tumor group. Venous ultrasonography was performed if the D-dimer plasma levels were positive (≥1 μg/mL) before surgery and on postoperative day (POD) 3 or 7.Of the 128 cases, DVT developed in 32 (25.0%). Among those, acute or subacute DVT was diagnosed in 22 cases on POD 3 and in 8 cases on POD 7. Compared with DVT-negative cases on POD 3, acute or subacute DVT-positive cases on POD 3 revealed a significant increase in the D-dimer level in all groups combined and in the benign tumor group but not in the glioma group. With regard to DVT on POD 3 in all groups, the receiver operating characteristic curve for the D-dimer level on POD 3 demonstrated a cutoff value of 3.3 μg/mL (sensitivity [0.636] and specificity [0.750]). However, if this cutoff value was used in practice, eight cases would be false-negative with a minimum D-dimer level of 1.5 μg/mL.The D-dimer cutoff value for acute or subacute DVT on POD 3 could be set to 3.3 μg/mL; however, the setting resulted in several false-negative cases. Practically, 1.5 μg/mL of the D-dimer cutoff value on POD 3 might be appropriate to avoid false-negative results [6)].

D-dimer levels indicate venous thromboembolism with a high degree of sensitivity and specificity in patients who have undergone craniotomy.

Elevated D-dimer levels at admission were associated with short-term and long-term mortality in

aneurysmal subarachnoid hemorrhage. This biomarker could be considered in future risk nomograms for long-term outcomes and might support future management decisions [7].

Previous studies have shown excessive D-dimer level was considered to be a risk factor of thromboembolic disease after spinal surgery [8] [9] [10].

Guo et al found that D-dimer level was closely associated with the development of Deep-vein thrombosis after craniotomy. The peak plasma D-dimer level occurred on the 3rd day after craniotomy, and the mean plasma D-dimer level gradually decreased from 3 to 14 days after surgery. This phenomena was consistent with the timing of development of Deep-vein thrombosis, because 65.6% of Deep-vein thrombosiss were detected within 1 week after surgery; however, whether D-dimer level can be used as an indicator of Deep-vein thrombosis requires further exploration in future [11].

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