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Commentary

Postoperative Venous Thromboembolism in Cushing's Disease

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DESCRIPTION

The incidence of Venous Thromboembolism (VTE) in Cushing's Disease (CD) is about ten times higher than that in general population, which tends to be underestimated due to the missed detection of asymptomatic VTE events. VTE can occur at any stage of CD, mainly during the postoperative period [1].

Endogenous Cushing's Syndrome (CS) is a clinical state of sustained exposure to excess glucocorticoid that results from excessive Adrenocorticotropic Hormone (ACTH) production from the pituitary adenoma, ectopic ACTH secretion, or excessive autonomous secretion of cortisol from a hyperfunctioning adrenocortical tumor. Up to 85% of ACTH-dependent CS cases were caused by ACTH-secreting Pituitary Adenomas (PAs), which were also referred as Cushing's Disease. Patients with CS have a high risk of venous thromboembolism, including Pulmonary Embolism (PE) and Deep Venous Thrombosis (DVT) [2]. In CD patients, there remains some discrepancy regarding the incidence of VTE in previous studies, varying from 0 to 8.8% under the condition of prophylactic anticoagulant therapy [3-5], while it can be up to 20% in those without. Moreover, in most of these studies, only symptomatic VTE incident were confirmed by objective methods. In addition, numerous studies have revealed that asymptomatic VTE has a higher rate than symptomatic VTE in major surgeries, such as spine surgery. Thus, it is of critical importance to evaluate the overall rate of VTE in CD patients who underwent transsphenoidal operation.

The onset of thromboembolism is a complex issue which mainly is concluded as a Virchow's triad, endothelial dysfunction, hypercoagulability, and stasis, which may act in synergy to increase the thromboembolic complications in hypercortisolism. Previous studies have identified some risk factors for postoperative thromboembolic events in CD patients, including inherited (such as hereditary thrombophilia like factor V Leiden, non-O blood groups) and environmental factors (reduced mobility, overt infections, invasive diagnostic procedures like inferior petrosal sinus sampling and surgery).

The Padua prediction score and Caprini risk assessment model are wildly used in medical and surgical in patients to evaluate the risk of VTE, respectively. However, whether they could make an accurate prediction of VTE in CD remained to be determined since they were not designed for these patients. Zilio identified six major independent risk factors for VTE in CS patients and established a CS-VTE score to predict the occurrence of VTE. In their cohort, 94% patients can be classified correctly. Nevertheless, whether this model could make an accurate prediction of VTE, both symptomatic and asymptomatic, in our cohort needs to be further verified.

In order to investigate the newly onset of postoperative VTE incidence rates in CD patients undergoing transsphenoidal surgery, we routinely performed the lower-limb ultrasonography and pulmonary angio-CT when necessary. Meanwhile, their clinical and hormonal data during active disease was also collected to further identify the major risk factors for postoperative VTE in CD patients by using a logistic multivariate regression analysis. In addition, we evaluated the accuracy of CS-VTE score, Pauda score and Caprini score in predicting postoperative VTE in our study, and further built a Huashan CD-VTE risk assessment model based on our data by using stepwise regression analysis and the Least Absolute Shrinkage and Selection Operator (LASSO).

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