

Abstract:

To analyze the incidence of PICC associated venous thrombosis. To predict the risk factors of thrombosis. To validate the best predictive model in predicting PICC associated thrombosis. Consecutive oncology cases in 341 who initially naive intended to be inserted central catheter for chemotherapy, were recruited to our dedicated intravenous lab. All patients used the same gauge catheter, Primary endpoint was thrombosis formation, the secondary endpoint was infusion termination without thrombosis. Two patients were excluded. 339 patients were divided into thrombosis group in 59 (17.4%) and non-thrombosis Group in 280 (82.6%), retrospectively. Tumor, Sex, Age, Weight, Height, BMI, BSA, PS, WBC, BPC, PT, D-dimer, APTT, FIB, Smoking history, Location, Catheter length, Ratio and Number as independent variables were analyzed by Fisher's scoring, then Logistic risk regression, ROC analysis and nomogram was introduced. Total incidence was 17.4%. Venous mural thrombosis in 2 (3.4%), "fibrin sleeves" in 55 (93.2%), mixed thrombus in 2 (3.4%), symptomatic thrombosis in 2 (3.4%), asymptomatic thrombosis in 57 (96.6%), respectively. Height ($\chi^2 = 4.48$, $P = 0.03$), D-dimer ($\chi^2 = 37.81$, $P < 0.001$), Location ($\chi^2 = 7.56$, $P = 0.006$), Number ($\chi^2 = 43.64$, $P < 0.001$), Ratio ($\chi^2 = 4.38$, $P = 0.04$), and PS ($\chi^2 = 58.78$, $P < 0.001$), were statistical differences between the two groups analyzed by Fisher's scoring. Logistic risk regression revealed that Height ($\beta = -0.05$, HR = 0.95, 95%CI: 0.911-0.997, $P = 0.038$), PS ($\beta = 1.07$, HR = 2.91, 95%CI: 1.98-4.27, $P < 0.001$), D-dimer ($\beta = 0.11$, HR = 1.12, 95%CI: 1.045-1.200, $P < 0.001$), Number ($\beta = 0.87$, HR = 2.38, 95% CI: 1.619-3.512, $P < 0.001$) was independently associated with PICC associated thrombosis. The best prediction model, D-dimer + Number as a novel co-variable was validated in diagnosing PICC associated thrombosis before PICC. Our research revealed that variables PS, Number, D-dimer and Height were risk factors for PICC associated thrombosis, which were slightly associated with PICC related thrombosis, in which, PS was the relatively strongest independent risk factor of PICC related thrombosis.

Reference:

Song, X., Lu, H., Chen, F., Bao, Z., Li, S., Li, S., Peng, Y., Liu, Q., Chen, X., Li, J. and Zhang, W. (2020) A longitudinal observational retrospective study on risk factors and predictive model of PICC associated thrombosis in cancer patients. *Scientific Reports*. 10(1), p.10090. <https://doi.org/10.1038/s41598-020-67038-x>.

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