Predictors of 30-day Mortality among Patients with Cancer-Associated Thrombosis in the RIETE database


OBJECTIVES

• It is not clear whether which subset of patients that are more likely to die after CAT (Cancer-Associated Thrombosis).
• Our objective was: To analyze the RIETE database in order to understand the factors associated with early cancer-associated thrombosis mortality.

METHODS

• We included consecutively patients with CAT from the RIETE database.
• Cancer related variables (type, metastatic disease, concurrent current chemotherapy, radiation therapy) Immobility (more than 4 days in the last 2 months), recent surgery, CBC values, Comorbidities present before the VTE diagnosis were recorded.
• The main outcome was death within 1 mo after CAT diagnosis.

Statistical analysis
• Divided the database between a derivation and a validation cohort.
• We selected 2 two thirds of the patients by simple random selection.
• To identify risk groups in the derivation cohort, we used a recursive partitioning and amalgamation method using a graphical approach to prune unnecessary splits.
• We tested the findings in the validation cohort calculating the risk of death by risk group and measured p-values for trend using a Cochrane Armitage test.
• To explore how robust our findings were, we isolated the analysis into predefined denominators: lung cancer, gastrointestinal malignancies, breast cancer, males.
• In addition, adjusted odds ratios were calculated by controlling for relevant covariates by means of multiple logistic regression analysis.
• IBM SPSS statistical program version 23, Armonk, New York.

RESULTS

• 10,025 patients with active cancer and VTE.
• Lung cancer was most common with 16.4% (n= 1,658) followed by breast (n=1,418) and colorectal (n=1,392) with 14%.
• The median age was 69 (range 14-101) and most had metastatic disease (n=6,361, 63%).
• Derivation cohorts = 6,660. Validation cohort = 3,365.
• 1,276 (12.6%) died within the first month.
• In the recursive partitioning analysis of the derivation cohort, increased white count level in the highest quartile was a strong predictor of early mortality (Odds Ratio (OR) 7.8, 95% Confidence Interval (95%CI) 4.6 - 13.1).
• Mortality was best predicted by elevated WBC, Metastasis, Immobility, PE. Increased WBC was better than the permutation of all other variables.
• With this, we created 4 risk groups, A B C D (Fig1).
• 429 (12.7%) of 3,365 patients died within 1 month in the validation cohort.
• The same groups were predictive of death (Fig 2).
• In the subgroup analysis, we found a significant p for trend among only men (p<0.0001), in patients with breast cancer (p<0.00001), with gastrointestinal cancer (p<0.0001), and lung cancer (p<0.0001) only subsets. (Fig 3).
• We evaluated the main differences between those patients with increased white count and the rest of the cohort. The patients with elevated white count, also had higher platelet count (236.00+132 vs. 229.00 +131 x 109/L; p<0.0001), were less commonly receiving chemotherapy (47.8% vs 63.9%; p< 0.0001), and most had metastatic disease (72.7% vs 59.3%; p< 0.0001).

CONCLUSIONS

• The likelihood of death among patients without metastasis, who are mobile and do not have pulmonary embolism is low. We shall rethink the intensity of anticoagulation in this subset of patients since they have a very high likelihood of bleeding during anticoagulation.
• An elevated WBC at CAT diagnosis is a better predictor of mortality than the permutation of immobility, metastasis and PE.
• We have derived and validated a robust set of characteristics, in 4 specific groups, that select patients with highest likelihood of death after cancer-associated thrombosis.