19.3 - Cardiac Care Unit (CCU), Intensive, and Critical Cardiovascular Care

Percutaneous dilatational tracheotomy in high-risk ICU patients

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Background: Percutaneous dilatational tracheotomy (PDT) has become an established procedure in cardiac intensive care units (ICU). However, the safety of this method has been under debate given the growing number of critically ill patients with high bleeding risk receiving anticoagulation, dual antiplatelet therapy (DAPT) or even a combination of both, i.e. triple therapy. There is a need for critical evaluation of these safety concerns. This is the first and largest international, multicenter study on PDT to date including such a high proportion of patients on antithrombotic therapy investigating whether PDT in high-risk ICU patients is associated with elevated procedural complications and analysing risk factors for bleeding occurring during and after PDT.

Methods: PDT interventions conducted in ICUs at 12 European sites between January 2016 and October 2019 were retrospectively analysed for procedural complications. For subgroup analyses, patient stratification into clinically relevant risk groups based on anticoagulation and antiplatelet treatment regimens was performed. Procedure-related complications for each risk group were analysed until hospital discharge. Additionally, predictors of bleeding occurrence were analysed by uni- and multivariable regression models.

Results: In total, 671 patients receiving PDT according to Ciaglia's technique with accompanying bronchoscopy were included. Patients were stratified into seven clinically relevant antithrombotic treatment groups. Within the whole cohort, 74 (11%) bleedings were reported to be procedure-related, none of which required surgical intervention. In almost all cases bleedings were associated with skin bleedings from the entry site and could easily be treated with minimally invasive stitching. Subgroup analysis showed no increase in the rate of procedure-related complications in patients with elevated body mass index. In a multivariable regression model bleeding occurrence during and after PDT was independently associated with platelet count (Odds ratio [OR] 0.73, 95% confidence interval [95% CI] [0.56, 0.92], p = 0.009), chronic kidney disease (OR 1.75, 95% CI [1.01, 3.03], p = 0.047) and previous stroke (OR 2.13, 95% CI [1.1, 3.97], p = 0.02). Neither PTT (OR 1.01, 95% CI [0.99, 1.02], p = 0.32), nor DAPT (OR 1.11, 95% CI [0.56, 2.04], p = 0.75) nor triple therapy (OR 0.93, 95% CI [0.49, 1.66], p = 0.82) were associated with bleeding risk.

Conclusion: In this international, multicenter study bronchoscopy-guided PDT was a safe and low-complication airway management option, even in a cohort of high risk for bleeding on cardiovascular ICUs. Platelet count, chronic kidney disease and previous stroke were identified as independent risk factors of bleeding during and after PDT whereas DAPT and triple therapy had no influence on bleeding events.