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Does EGD before TEE Change the Incidence of Adverse Outcomes?

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Abbreviations: TEE: Transesophageal echocardiography; GI: Gastrointestinal; EV: Esophageal varices

Introduction

Transesophageal echocardiography (TEE) is a routine technique used both in the outpatient and intraoperative. Oropharyngeal and upper gastrointestinal (GI) tract perforation and GI hemorrhage are uncommon but significant adverse effects that happen. in addition, the usual side effect of TEE is a sore throat, hoarseness, dysphagia, and odynophagia [1-3]. TEE is a relatively safe procedure in large multicenter studies, nonetheless, because esophageal varices (EV) were previously believed to be relatively contraindication for TEE, individuals with EV were not included in these studies, because of worries that it might cause upper GI bleeding [6-8]. It is important to keep in mind that gastroenterologists do not currently have any recommendations or guidelines regarding how to appropriately "clear" these patients to go on with TEE [9]. According to the most recent data, individuals who receive TEE have a very low rate of bleeding [2,3,8-18]. Currently, a significant number of patients may have an extra-invasive procedure that may not be essential due to the ambiguity of the existing recommendations and the vast diversity in TEE practice.

Methods and Analysis

Data was collected manually from our electronic medical records after IRB approval was obtained. We collected data from 2018-2023 for patients above 17 years old who underwent TEE procedures in that period, variables include Age, Gender, hemoglobin level, EGD procedure before or after the TEE, anticoagulation therapy, anti-platelets therapy, and previous GI bleeding. A total of 112 patients were studied, 55 were females with a percentage of 49.11%, with a Median Age of 52, 43 patients 38.39% were on oral anticoagulation, 33.93% were on anti-platelets therapy while they underwent the TEE procedure, 3.57% had a history of GI bleed, 8.93% had EGD before the TEE in 30 days period.

Results

We found that 20.54% had a hemoglobin drop >1 g/dl 10 days after TEE, and 0.04% of these patients who had hemoglobin drops were related to GI bleeding. Of the total study population 0.89% had GI bleeding after the TEE in 30 days period. 1.79% underwent EGD after the TEE in a 30-day period.

Discussion

TEE is considered a safe procedure [19] with an incidence of bleeding less than 0.01% [20]. In the current literature, there is a low complication profile for TEE, moreover, no perforation or death was reported as a complication, even though GI bleeding is a known risk of TEE, most cases are self-limited [21]. However, there is a study showed that TEE GI-related complications are more pronounced when patients have baseline anatomical esophageal abnormalities, with prolonged procedure (TEE) time, and its more often seen when TEE is done in the setting of structural heart procedure due to a need for device manipulation longer period of procedure [22]. There are contraindications including but not limited to esophageal varices, strictures, and masses, even for these contraindications there is no literature to report complications related to TEE in these patients' population. There are no clear guidelines for EGD before TEE indications, more over there are no guidelines on what to determine to clear the patient for TEE when EGD is done [20]. Our study aimed to investigate various factors and outcomes associated with transesophageal echocardiogram (TEE)

procedures in patients above 17 years old and if having EGD done before TEE will impact the outcomes of TEE. The demographic characteristics of the study population revealed that 55 out of 112 patients were females, accounting for 49.11% of the sample. The median age of the patients was 52 years, indicating that the study primarily included middle-aged and older individuals. These findings provide insights into the distribution of gender and age among patients undergoing TEE procedures in the investigated period. In terms of medication usage, a significant proportion of patients were on anticoagulation therapy or antiplatelet therapy during the TEE procedure. Specifically, 43 patients (38.39%) were receiving oral anticoagulation, while 38 patients (33.93%) were on antiplatelet therapy. These observations highlight the importance of considering these medications during the TEE procedure and their potential impact on the outcomes assessed in this study.

Furthermore, a small percentage of patients (3.57%) had a history of GI bleeding, indicating a pre-existing condition that might affect the outcomes of the TEE procedure. It is crucial to evaluate the impact of this factor on subsequent events such as post-procedural GI bleeding or changes in hemoglobin levels. Regarding the pre-TEE EGD, 8.93% of patients underwent an EGD within 30 days before the TEE means in our study the proportion of patients having EGD before TEE was quite less. The main findings of this study include the incidence of hemoglobin drop, post-procedural GI bleeding, and subsequent EGD procedures within 30 days after the TEE. Notably, 20.54% of patients experienced a hemoglobin drop greater than 1 g/dl ten days after the TEE procedure. This finding suggests the possibility of bleeding or other related complications following TEE and emphasizes the need for careful monitoring and follow-up in these patients.

In terms of post-procedural GI bleeding, only 0.89% of patients experienced this complication within 30 days after the TEE. This low percentage shows that GI bleeding as a cause of a drop in hemoglobin is a less likely possibility and depicts that other causes to lead to a drop in hemoglobin. Interestingly, 1.79% of patients underwent an EGD within 30 days after the TEE. This observation indicates the need for further investigation into the reasons behind these subsequent procedures and the potential association between TEE and the need for additional GI evaluations. Overall, this study provides valuable insights into various aspects of TEE procedures in a specific patient population. The findings shed light on the prevalence of specific factors such as medication usage, history of GI bleeding, and the occurrence of post-procedural complications. However, it is important to consider the limitations of this study, including its retrospective nature and the potential biases associated with manually collected data. Future research should aim to validate and expand upon these findings through prospective studies with larger sample sizes. Additionally, investigating the specific factors that contribute to hemoglobin drop, post-procedural GI bleeding, and subsequent EGD procedures would provide a more comprehensive understanding of the outcomes associated with TEE procedures. This knowledge can contribute to the development of strategies to optimize patient care, enhance procedural safety, and improve overall outcomes in individuals undergoing TEE.

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