Early Thromboembolism Chemoprophylaxis is Safe and Efficacious After Intracranial Hemorrhage from Traumatic Brain Injury

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Introduction

Patients with traumatic brain injury (TBI) are at risk for development of thromboembolic disease (TE). The use of chemoprophylaxis in this patient group has not fully been characterized. We hypothesize that early chemoprophylaxis in patients with TBI is safe and efficacious.

Methods

In May 2009, a protocol was instituted for patients with TBI where chemoprophylaxis for TE with either 30mg of Lovenox twice daily or 5000U of Heparin three time a day was initiated 24 hours after an intracranial hemorrhage (ICH) was demonstrated as stable on head CT. Two cohorts were evaluated; cohort 1 included patients from May 2008 – April 2009 who had no routine administration of chemoprophylaxis, and cohort 2 included patients from May 2009 – May 2010, after the protocol was instituted. The groups were compared with the major outcomes being deep venous thrombosis (DVT), pulmonary embolism (PE) and increase in size of ICH.

Results

312 patients with TBI were seen during the study course and 236 patients met criteria for inclusion in the study; 107 patients in cohort 1 and 129 patients in cohort 2. The cohorts were evenly matched in terms if head AIS and GCS. The cohorts had a significant defference in presence of a subdural hematoma; 40 in the pre-guideline cohort and 73 post-guideline cohort (p=0.004). The cohorts were well matched in terms of all other forms of ICH. Length of stay and number of ICU days were higher in he pre-guideline group (p=0.002 and p=0.0006 respectively).

DVT rate for cohort 1 was 6 occurrences (5.61%) and 0 occurrences (0%) in cohort 2, which was a statistically significant difference (p=0.0080). PE was found in 4 patients for cohort 1 (3.74%) and 1 patient in cohort 2 (0.78%), a difference that did not reach statistical significance (p=0.18). 3 instances of increased ICH occurred after starting anticoagulation for chemoprophylaxis in cohort 1 (2.8%) and 1 patient in cohort (0.7%) was not statistically different (p=0.33).

Conclusions

Use of chemoprophylaxis in traumatic brain injury 24 hours after stable head CT is safe and decreases the rate of DVT formation.

Learning Objectives

At the conclusion of this session participants should be able to 1) Describe the importance of thromboembolism prophylaxis. 2) Discuss, in small groups the controversy surrounding chemoprophylaxis in trauma. 3) Identify an effective treatment for thromboembolism prophylaxis.

References

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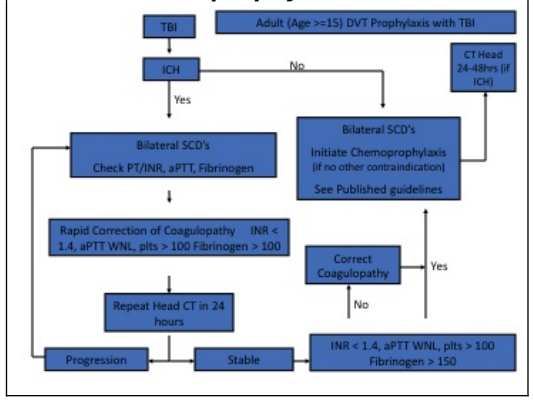
DVT Chemoprophylaxis Protocol



Chemoprophylaxis Guidelines

- Age > = 15 Ideal Body Weight > 60 kg, BMI < 35
- Normal SCr (CrCl > 30 ml/min)
  - Lovenox 30 mg SQ BID
  - If ideal body weight < 60 Kg Lovenox 0.5 mg/kg SQ BID
- Abnormal SCr (CrCl < 30 ml/min)
  - Heparin 5000 U SQ TID
- BMI > 35
  - Heparin 5000 SQ TID
- Age < 15 – No Protocol