

BACKGROUND

- Epidural Anesthesia is a central component of pain control for hepatobiliary surgeries
- Coagulation disturbance is a known risk of hepatic resection
- Epidural analgesia carries the risk of bleeding or epidural hematoma
- Currently unknown whether pre-operative characteristics can accurately predict postoperative coagulation disturbance

Primary Objective: To assess impact of risk factors on predictability of postoperative coagulation disturbance, including patient characteristics (age, sex, BMI, etc.) and operative characteristics (length of surgery, amount of liver resected)

Secondary Objective: To determine the incidence, and time course of postoperative coagulation disturbance (CD), defined as: INR>1.5, PTT> 40 sec, or platelet count <100,000/μL, in patients receiving epidural analgesia

METHODS & SAMPLE

- Patients receiving hepatic resection between 10/2011-10/2023 were identified using the Healthcare Common Procedure Coding System
- Records were reviewed for patient demographics (Age, sex, BMI, ASA status), characteristics influencing eligibility for epidural (pre-operative coagulation labs, recent anticoagulation, chemotherapy), operative parameters (procedure length, mass/volume of liver resected), and post-operative coagulation data (for 7 days following surgery)

RESULTS

- Out of 705 charts screened, 684 patients were identified as having hepatic resection, 37 of which were excluded for death within 7 days of surgery or for preoperative CD
- Incidence of post-operative CD was 24.9% within 72 hours
- Majority of CD was from thrombocytopenia (19.9% of cases) rather than loss of synthetic liver function
- Using threshold of <85000 platelets, 15.5% of patients had CD
- Sensitivity analysis found that no patients had <5% risk of CD; only 2 patients had <10% risk
- Using multiple machine learning methods, no predictive value from age, sex, ASA class, pre-operative anticoagulation or chemotherapy, operative duration, or year of data
- There were no cases of spinal epidural hematoma

KEY POINTS

Coagulation disturbance was common after hepatic resection, reaching incidence of 24.9% by 72 post-operative hours

Table 1: Patient Characteristics, Incidence of coagulation disturbances <72 hours post-operation

Variable	Estimate (n=647 patients)
Age	58 (SD: 13)
Sex female	48%
Mean BMI	30 (SD: 6)
Incidence of coagulation disturbance (<72 hours)	25% (161)
Incidence of coagulation disturbance (<48 hours)	22% (145)
Incidence of coagulation disturbance (<24 hours)	11% (73)
Incidence of thrombocytopenia, <100,000 x10 ⁶ /L (<72 hours)	20% (129)
Incidence of coagulation disturbance with thrombocytopenia based on <85,000 x10 ⁶ /L (<72 hours)	15% (100)
Incidence of coagulation disturbance with thrombocytopenia based on <70,000 x10 ⁶ /L (<72 hours)	10% (66)
Thoracic epidural placed preoperatively	79% (512)
Magnetic resonance imaging for diagnosis of spinal epidural hematoma	0% (0)

No patient had <5% risk of postoperative coagulopathy, and preoperative data were insufficient to predict risk factors

DISCUSSION

- Pre-operative data insufficient to predict risk factors for coagulopathy
- Incidence of CD was **lower** than that previously noted in the literature
- Majority of coagulation disturbance was from thrombocytopenia, rather than loss of synthetic liver function
- Timeline of coagulation disturbance coincides with best practice recommendation for epidural removal
- No cases of spinal epidural hematoma
- Future steps: Patient and practitioner surveys may be helpful in evaluating decision-making incorporating individual patient and practitioner risk preferences

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