12-5-2018

Retrospective review of patients treated with argatroban for heparin induced thrombocytopenia

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BACKGROUND

- Heparin induced thrombocytopenia (HIT) is potentially a life-threatening complication caused by an immunological response to heparin exposure characterized by thrombocytopenia with a paradoxical increase in the incidence of thrombosis.[1,2,3]
- The American Society of Hematology recommends the discontinuation of heparin, administration of a non-heparin anticoagulant, and HIT confirmation with a serologic assay upon suspicion of HIT.[4]
- A challenge remains with the over-diagnosis and treatment of HIT based solely on laboratory results (i.e., PF4 ELISA assay results), rather than with corresponding risk factor assessments (i.e., 4T score and PF4 ELISA assay).[2]
- Inappropriate use of argatroban may potentiate bleeding complications.[5]

PURPOSE

The purpose of this study is to review the utilization of argatroban in patients with a suspected diagnosis of HIT and evaluate their clinical outcomes.

METHODS

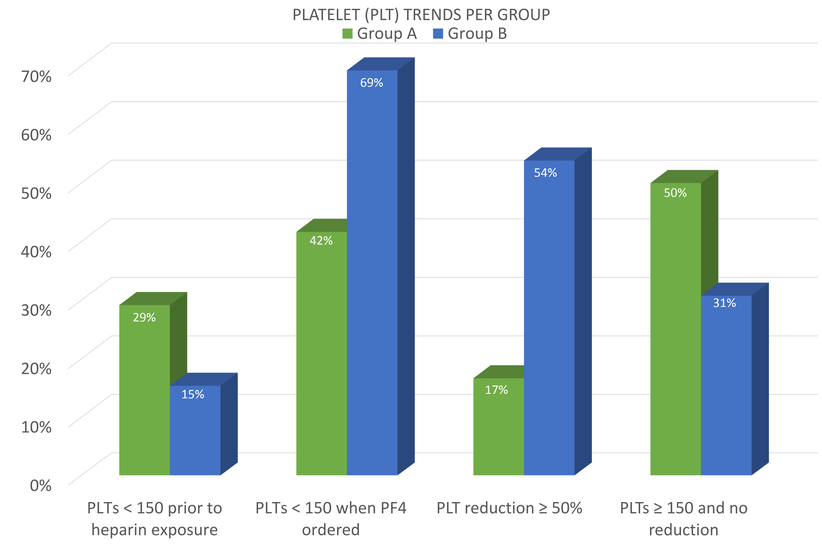
- Retrospective observational chart review of patients admitted to Baptist Hospital of Miami from January 1, 2018 to July 31, 2018 treated with argatroban
- Inclusion Criteria:
  - Patients 18 years of age and older
  - Positive PF4 test result [optical density (OD) ≥ 0.4]
  - Received treatment with argatroban
- Exclusion Criteria:
  - History of HIT prior to admission
  - Argatroban for extracorporeal circuit patency of continuous renal replacement therapy (CRRT) in critically-ill patients with HIT
  - Argatroban for catheter directed thrombolysis
- Primary Outcome: Stratification of patients into low index of suspicion (group A) or high index of suspicion (group B) as follows :
  - Group A: 4T score <4
  - Group B: 4T score ≥4
- Secondary Outcomes: Percent reduction in platelets, number of SRA test ordered and SRA results, incidence of new thromboembolic events, clinically relevant bleeds, and deaths
- Fisher's exact test for discrete data and t-test of unequal variance for continuous data was utilized

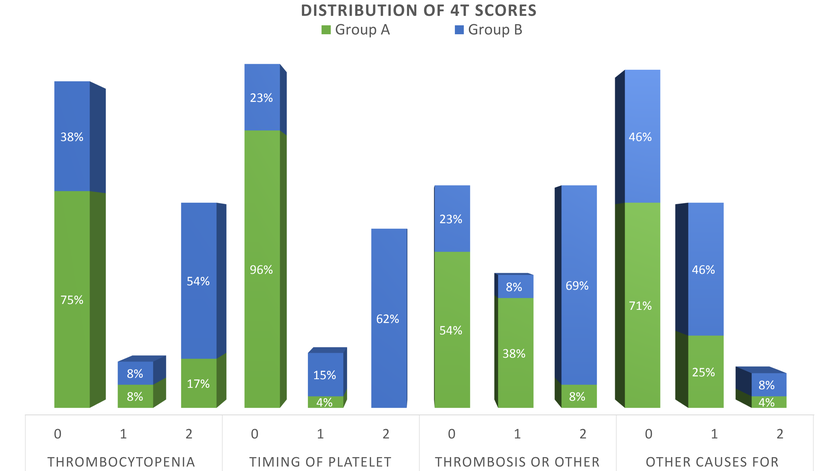
RESULTS

Baseline Demographics	n=37
Mean Age (years)	65
Mean SCr (mg/mL)	2.84
Mean CrCl (mL/min)	52
Mean AST (units/L)	46
Mean ALT (units/L)	33

Heparin Product Exposure	Group A	Group B
Heparin IV	8 (33%)	7 (54%)
Heparin SubQ	8 (33%)	4 (31%)
Heparin via dialysis	3 (13%)	2 (15%)
Enoxaparin	4 (17%)	0

Index of Suspicion	Group A n=24 (65%)	Group B n=13 (35%)	p-value
Average 4T Score	1.3	4.6	<0.000002
PF4 mean OD	1.005	1.371	0.299
PF4 OD ≥ 2	1 (4%)	4 (31%)	0.423
New thromboembolic events	2 (8.3%)	9 (69.2%)	0.0002





RESULTS

Secondary Outcome Measures	Group A, n=24 n (%)	Group B, n=13 n (%)
Platelet Reduction		
Mean % reduction in PLTs	5%	33.7%
Mean # of days between PLT reduction	5	8
Functional Serotonin Release Assay (SRA)		
SRAs ordered	5	4
Positive SRAs	0	1
Adverse Events		
Clinically relevant bleeds	3 (12.5%)	0
Deaths*	2 (8.3%)	0

*Non-argatroban related deaths

CONCLUSIONS

- 65% of patients with a low 4T score received treatment with argatroban
- 69.2% of patients in Group B experienced a new thromboembolic event versus 8.3% for those in group A
- A higher proportion (54%) of patients in Group B had ≥ 50% reduction in PLTs

DISCUSSION

- A high index of suspicion is recommended for diagnosing HIT
  - Disease states and medication can cause thrombocytopenia
  - False positive PF4 can result from antiphospholipid syndrome and systemic lupus erythematosus
- Pretest probability assessment with 4T score calculations should be taken into consideration prior to ordering ELISA PF4/heparin antibodies tests
- Prospective studies will be required to test the clinical utility and safety of a pretest probability assessment with 4T score calculation

LIMITATIONS

- A sample size of 194 would have been required to detect a significant difference with 80% power
- Prior heparin exposure could not be confirmed
- Observed rates of thrombosis and clinically relevant bleeds were evaluated for current hospital admission only

DISCLOSURES

All authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have direct or indirect interest in the subject matter of this presentation.

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