Bridging Anticoagulation in Children with Mechanical Valves: ASurvey of Clinicians Practice Patterns

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Background

- Children with prosthetic mechanical valves are at increased risk for thromboembolic complications.
- Long-term anticoagluation with Vitamin K antagonist (VKA) is required.
- The 2012 American College of Chest Physicians (ACCP) statement provides peri-procedure antithrombotic therapy guidelines for selected patients.
- This study was designed to investigate the clinician practice patterns on peri-procedure anticoagulation in children with prosthetic mechanical valves, particularly the use of SubQ low molecular weight heparin (LMWH).

Methods

- We designed a survey consisting of multiple choice questions and clinical scenarios using SurveyMonkey®.
- The survey was sent to clinicians who were members of Pedi Heart, an internet discussion forum for healthcare professionals caring for children with heart disease.
- The survey was administered monthly to members of Pedi Heart from January to April 2013.
- Study was aproved by the Institutional Review Board of Ann & Robert H. Lurie Children's Hospital of Chicago, IL.

Results

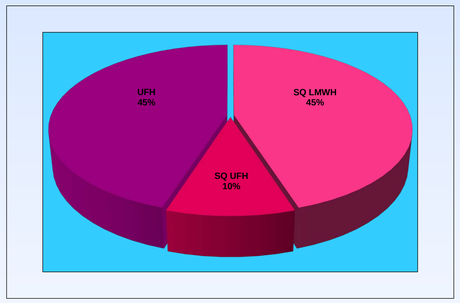
Respondents Characteristics

- 91 respondents completed the survey
- 6.1% response rate based on estimated Pedi Heart membership of 1500 in 2009
- Respondents medical background: Pediatric cardiologists (90%); cardiac surgeons (6.6%), advanced nurse practitioners (3.4%)

Anticoagulation management

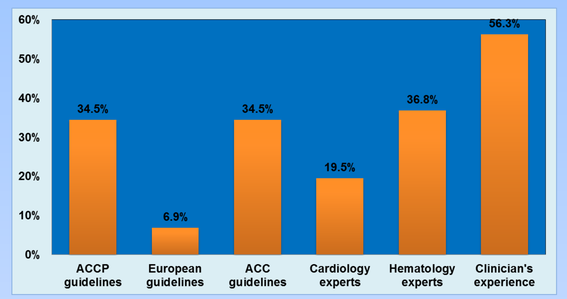
- Primary cardiologists (53.9%)
- Cardiac anticoagulation service (28.6%)
- Joint cardiac and hematology (13.2%)
- Hematology service (4.4%)

Bridging agent preferences (Figure 1)



- SubQ LMWH
  - ✓ Twice daily regimen (81.2%)
  - ✓ Once daily regimen (18.8%)
  - ✓ Monitor anti-Xa levels while bridging (47.9%)
  - ✓ Major thrombotic complications (none)
  - ✓ Major bleeding complications (2%)
  - ✓ Minor bleeding complications (24.5%)

Resources which influence bridging decisions (Figure 2)



Clinical Scenario 1:
Sub therapeutic INR (1.8) on POD 3 after mitral valve replacement

- No bridging therapy and hospitalize patient until INR is therapeutic (76.9%)
- Bridge with SubQ LMWH and discharge home with close follow up (19.2%)
- Bridge with SubQ UFH and discharge home with close follow up (3.9%)

Clinical Scenario 2:
Bridging anticoagulation in a Marfan patient with prosthetic aortic valve and elective scoliosis repair

- Discontinue warfarin, preoperative admission for continuous UFH (47.4%)
- Discontinue warfarin and outpatient bridging with SubQ LMWH (46.2%)
- Discontinue warfarin and outpatient bridging with SubQ UFH (6.4%)

Clinical Scenario 3:
Bridging anticoagulation in an infant with prosthetic mitral valve and elective G-tube placement

- Preoperative admission for UHF (57.7%)
- Outpatient bridging with SubQ LMWH (21.8%)
- No bridging needed (16.7%)
- Outpatient bridging with SubQ UFH (3.9%)

Conclusion

- Clinician's peri-procedure bridging practice pattern is variable despite guidelines.
- Clinician personal experience plays an important role in bridging decisions.
- SubQ LMWH is frequently used as a bridging agent without significant major complications.
- Future studies should assess the effectiveness, safety, and cost associated with SubQ-LMWH as a bridging agent in children with mechanical valves.

References

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