GP IIB/IIIA Inhibitor Use During Endovascular Intervention

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Presenter Disclosure Information

Name: Jay Yadav, M.D.

Nothing to Disclose Related to this Presentation
Underlying pathophysiology of PVD is atherosclerosis

Plaque rupture (spontaneous or due to vascular intervention) is a potent stimulus for platelet activation and aggregation

Coagulation system is activated by vessel damage and activated platelets generate thrombin

Diabetes incidence high in patients with PVD

GP IIb/IIIa inhibitors not associated with increased incidence of ICH (unlike fibrinolytics)
GP IIB/IIIA Inhibitor Use During Endovascular Intervention

- Safety
- Benefit
- Cost
# Intracerebral Hemorrhage Rates in GP IIb/IIIa Receptor Inhibitor Coronary Intervention Trials

<table>
<thead>
<tr>
<th>Trial</th>
<th>N</th>
<th>Placebo (%)</th>
<th>Inhibitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(%)</td>
<td>(%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPIC</td>
<td>4,010</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>IMPACT</td>
<td>2,139</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>RESTORE</td>
<td>1,265</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>CAPTURE</td>
<td>2,792</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>EPILOG</td>
<td>12,305</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Pooled</td>
<td></td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Abciximab in Carotid Stenting
Kapadia et al, Stroke 2001, 32: 2328-32

151 patients
159 procedures

23 patients
25 procedures

Control group
ASA + ADP antagonist

128 patients
134 procedures

Abciximab group
ASA + ADP antagonist
+ Abciximab (0.25 mg/kg bolus ± 0.125 mcg/kg/min for 12 hrs)
# Procedural Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Control (n=25)</th>
<th>Abciximab (n=134)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor strokes</td>
<td>0</td>
<td>1 (0.8%)</td>
</tr>
<tr>
<td>Major strokes</td>
<td>1 (4%)</td>
<td>0</td>
</tr>
<tr>
<td>Retinal infarct</td>
<td>0</td>
<td>1 (0.8%)</td>
</tr>
<tr>
<td>ICH</td>
<td>1 (4%)</td>
<td>0</td>
</tr>
<tr>
<td>MI</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Death</td>
<td>1 (4%)</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total events</strong></td>
<td>2 (8%)</td>
<td>2 (1.6%)</td>
</tr>
</tbody>
</table>

\[ p=0.05 \]
### 30 Day Follow-up: New Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Control (n=25)</th>
<th>Abciximab (n=134)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor strokes</td>
<td>0</td>
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<td>ICH</td>
<td>0</td>
<td>1 (0.8%)</td>
</tr>
<tr>
<td>MI</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Death</td>
<td>2 (8%)</td>
<td>5 (3.7%)</td>
</tr>
<tr>
<td>Total events</td>
<td>2 (8%)</td>
<td>6 (4.5%)</td>
</tr>
</tbody>
</table>
All events: 30 days

Events (%)

- Control
- Abciximab

Neurological Events:
- Control: 8%
- Abciximab: 2.3%

Non Neurological Events:
- Control: 8%
- Abciximab: 3.7%
Severe Aortic Arch Tortuosity with MCA embolization
PLAQUE PROTRUSION THROUGH STENT STRUTS

F: large intimal flaps.
Dethrombosis of Left Anterior Descending Coronary Artery with Abciximab

Initial Angiogram

Angiogram Post Abciximab Bolus

Combination Therapy in PVD

- Low Dose Retavase
- Full Dose ReoPro
- Low Dose, Weight-Adjusted Heparin
Platelet Thrombus vs Stabilized Clot

- Fibrinolytic ineffective
  - Antiplatelet effective
  - Platelet-Rich Thrombus
    - “White” Thrombus

- Fibrinolytic effective
  - Antiplatelet effective
  - Platelet/Fibrin Thrombus
    - “Red” Thrombus
**Abciximab + Urokinase in Peripheral Arterial Thrombolysis**

Tepe G et al.


Digital subtraction angiogram of a right common iliac artery occlusion

Baseline

After 1 Hour of Treatment

Abciximab + Reteplase in Chronic SFA Occlusion

Baseline lysis

After 2 hours

After stent

At 6.5 hours

After 6 hours

(palpable pulse)

Katzen B. Presented at the 11th Annual Symposium of Transcatheter Cardiovascular Therapeutics; September 22, 1999; Washington, DC.
Major Bleeding at Discharge/Day 7 by Abciximab

Note: No incidence of intracranial hemorrhage or stroke among the subjects in the study.
Patency on 20-hour Angiogram

<table>
<thead>
<tr>
<th>Dose</th>
<th>Reteplase</th>
<th>Reteplase + abciximab</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 U/hr</td>
<td>33%</td>
<td>67%</td>
</tr>
<tr>
<td>0.2 U/hr</td>
<td>42%</td>
<td>64%</td>
</tr>
<tr>
<td>0.5 U/hr</td>
<td>100%</td>
<td>62%</td>
</tr>
<tr>
<td>1.0 U/hr</td>
<td>40%</td>
<td>80%</td>
</tr>
<tr>
<td>Combined</td>
<td>49%</td>
<td>66%</td>
</tr>
</tbody>
</table>
Distal Embolization (Sufficient to Require Intervention)

- **0.1 U/hr**: 67% Reteplase, 0% Reteplase + abciximab
- **0.2 U/hr**: 25% Reteplase, 0% Reteplase + abciximab
- **0.5 U/hr**: 0% Reteplase, 7% Reteplase + abciximab
- **1.0 U/hr**: 33% Reteplase, 17% Reteplase + abciximab
- **Combined**: 31% Reteplase, 5% Reteplase + abciximab
Case Examples of GP IIB/IIIA Use
Bilateral Carotid Dissection with Acute Stroke
Middle Cerebral Artery Intervention
Symptomatic Pt with Single Vertebral Supplying Entire Brain
83 y.o. woman
- IRDM x 30 yrs
- PMHx:
  - Left CEA
  - S/p CABG
  - Renal artery disease
- Aug 01: right femoral-anterior tibial bypass for claudication
- Jan 02: bypass thrombectomy for acute leg ischemia
- Apr 02: Non-healing ulcer, gangrenous toe, redo femoral-AT bypass
- May 02: graft occlusion by U/S
64 yo Sx Rica

Severe ankylosing spondylitis-
- Cannot move neck in any plane
- Cervical and thoracic spine anteriorly flexed at 45 degrees

Chronic renal insuffic – Cr 4.2

Gadolinium
Case 1

- 59 yo Male w HTN, ↑Chol, Cigs undergoing L Heart Cath
- Immediately upon withdrawal of Pigtail Catheter from LV developed Neurological Sx
  - Global Aphasialia
  - R Hemianopsia
  - Flacid R Hemiparesis
  - NIHSS=22
Angiogram

- Acute Cutoff of L MCA Trunk
- Few Pial Collaterals from ACA to MCA
Endovascular Approach

- 4500U IA Heparin
  - 6F MPA1 Guide Inserted into L ICA over 0.035” Glide Wire
  - 2.3F Microcatheter advanced into MCA over 0.014” Soft Hydrophilic Wire
Endovascular Approach

- Wire Advanced Through Thrombus for More Support
  - Results in Thrombus Migration into MCA Superior Division
    - 21 min after onset
Endovascular Approach

- Microcatheter is Placed Within Thrombus in Superior Division
  - 1 U Retevase Infused over 1 min
  - Repeat Angiogram after 5 min Unchanged
Endovascular Approach

- Reopro 1mg Injected Into Thrombus
  - Five min Later Partial Recannalization of Superior Division
  - Persistent Slow Flow in Distal Branches of Inferior Division and Proximal Superior Division
Endovascular Approach

- Retevase 1U followed by Reopro 5mg (1/4 Bolus) Injected into Sup Division

  - 10 min Later Nearly Complete Flow Except for One Distal Branch Occlusion
Outcome

- Speech and R Arm Movement Began To Return on the “Table”
- Final Angiogram at 75 min After Onset is Normal
Outcome

- By Next AM
  NIHSS=1
- CT Normal
- D/C Day 2- Normal
CONCLUSIONS – Carotid Use

- GP IIb/IIIa antagonists are safe in carotid stenting
- Role with Emboli prevention devices is not clear
- Acute stroke / carotid thrombosis
Conclusions – Carotid Use

- May Reduce Post Procedure Embolization from Plaque Protruding through Stent Struts
- Careful Dosing/Monitoring Critical:
  - 50 u/kg heparin, ACT, PAU
  - Heparin and ACT correlates of ICH
General Suggestions for 2b3a in Endovascular Cases

- High Risk for Acute/Sub-acute Thrombosis
- Consequence of AT/SAT Catastrophic
- High Risk of Embolization during or immediately Post-Procedure
  And
- No Adventitial Wire Perforation
CONCLUSIONS

- Below the Knee
- Combination with Lytics
- Inability to Stent
- Acute Thrombosis
- Active Embolizers – Shaggy Aorta