Real World Experiences with Angiotensin II in Refractory Shock

Zachary D. Halbig, PharmD Candidate; Susan E. Smith, PharmD, BCPS, BCCCP; Andrea S. Newsome, PharmD, BCPS, BCCCP; Shravan Kethireddy, MD

REFERENCES

CONCLUSIONS

RESULTS CONTINUED

• Patients were receiving a median of three vasopressors at the time of ATII initiation
• Received ATII for a median of 18 hours
• Within 3 hours of ATII initiation, mean arterial pressure (MAP) increased by a median of 15 mmHg
• Median Time to reach MAP >65 was 16 minutes
• Twenty-Seven patients (79%) received VTE prophylaxis and three of these (9%) developed a VTE within 28 days
• Fifteen Patients (44%) did not survive to discharge
• Median Drug expenditure was $3000 per patient (cumulative expenditure $186,000)
• Trend towards higher mortality in patients with distributive shock compared to other shock states. (see chart below).

CONCLUSIONS

• The study observed a positive hemodynamic response to ATII and a lower mortality rate in refractory states.
• Future research should compare the safety and efficacy of ATII to other second-line vasoactive agents (e.g., vasopressin).
• Limitations:
  • Small sample size
  • Retrospective design
  • Lack of control group
  • Absence of illness severity score
• Advantages:
  • Largest case series of ATII to date
  • Only one to include mixed shock states

RESULTS

<table>
<thead>
<tr>
<th>Variable</th>
<th>n=34*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>68 (57 – 72)</td>
</tr>
<tr>
<td>Male Gender</td>
<td>14 (41)</td>
</tr>
<tr>
<td>Weight</td>
<td>103 (87 – 113)</td>
</tr>
<tr>
<td>Home ACE/ARB</td>
<td>9 (26)</td>
</tr>
<tr>
<td>Distributive Shock</td>
<td>26 (76)</td>
</tr>
</tbody>
</table>

Indication for Vasopressors

- Septic shock: 22 (65)
- Cardiogenic shock: 4 (12)
- Combined septic and cardiogenic shock: 3 (9)
- Vasoplegia: 3 (9)
- Hypovolemic shock: 1 (3)
- Vasoconstrictive shock: 1 (3)

Number of Vasopressors: 3 (2 – 3)

Ordering location of angiotensin II

- Critical care unit: 11 (32)
- Cardiovascular intensive care unit: 6 (18)
- Medical intensive care unit: 6 (18)
- Surgery/trauma intensive care unit: 6 (18)
- Operating room: 3 (9)
- Intensive care unit: 2 (6)

Ordering service of angiotensin II

- Critical Care: 26 (76)
- CT Surgery: 3 (9)
- Anesthesia: 2 (6)
- Trauma: 2 (6)

Heart Failure: 1 (1)

Primary

• Characterize when, how, and in what patients ATII was prescribed.

Secondary

• Hemodynamic Response
• Incidence of Venous Thromboembolism (VTE)
• Inpatient mortality
• Drug Expenditure

STUDY DESIGN

• Design: IRB-approved, retrospective cohort study
• Time Frame: June 2018 to January 2019
• Setting: Northeast Georgia Health System (Gainesville and Braselton)
• Inclusion Criteria:
  • Adult Patients
  • Admitted to either facility
  • Received ATII
  • Vasopressors for longer than 3 hours
• Identification of Patients: Pharmacy dispensing records
• Administration Confirmation: Via chart review

RESULTS CONTINUED

• Patients were receiving a median of three vasopressors at the time of ATII initiation
• Received ATII for a median of 18 hours
• Within 3 hours of ATII initiation, mean arterial pressure (MAP) increased by a median of 15 mmHg
• Median Time to reach MAP >65 was 16 minutes
• Twenty-Seven patients (79%) received VTE prophylaxis and three of these (9%) developed a VTE within 28 days
• Fifteen Patients (44%) did not survive to discharge
• Median Drug expenditure was $3000 per patient (cumulative expenditure $186,000)
• Trend towards higher mortality in patients with distributive shock compared to other shock states. (see chart below).

CONCLUSIONS

• The study observed a positive hemodynamic response to ATII and a lower mortality rate in refractory states.
• Future research should compare the safety and efficacy of ATII to other second-line vasoactive agents (e.g., vasopressin).
• Limitations:
  • Small sample size
  • Retrospective design
  • Lack of control group
  • Absence of illness severity score
• Advantages:
  • Largest case series of ATII to date
  • Only one to include mixed shock states

REFERENCES

Ideas:

Price comparison between ATII and NE
Lower VTE rate compared to ATHOS-3