Vascular Injuries in Athletes

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Disclosures

None
Materials

Survey
Arterial Injuries
Venous Injuries
Compartment Syndrome
Methods

- **Review Literature**
  Arko, Vascular Complications In Athletes
  JVS 2001 May;33(5) 935-942
  June 1994-June 2000 26 pts 14 arterial injuries, 12 Venous Injuries
  8 Baseball, 7 FB, 2 Cyclists, 2 rock climbers, 2 wind surfers, 1 each swimmer, kayaker, weight lifter, VB player, Marksman

- **Survey via CATS**

- **Survey was Check Box**

- **Requesting form filled out on vascular Injuries over 10 years**
Results

- 131 Responses
- 126 Data containing responses
- 5 Responses lacked data
- 123 Schools
  - 96 DI
  - 2 NAIA
  - 11 DII
  - 3 JUCO
  - 11 DIII
- 1485 yrs experience by respondents
Results

• 200 Male
• 115 Female
• 111 Not Designated

• 426 Total Vascular Injuries Reported
Results

• **Compartment Syndrome - 94**
• **22.1%**

- 33 Football
- 1 W BB
- 3 M BB
- 3 Baseball
- 3 Softball
- 5 M T&F
- 5 W T&F
- 5 M T&F
- 3 W Lacrosse
- 3 M Cross Country
- 1 W Cross Country

- 14 W Soccer
- 8 Soccer
- 1 W Soccer
- 1 W Cross Country
- 3 M Cross Country
- 1 W VB
- 1 M Tennis
- 2 W Field
- Hockey
- Hockey

- 1 Hockey
- 1 W Rowing
Results

• Limb Swelling - 66

• 15.5 %
  • 19 FB
  • 4 W Soccer
  • 35 Unspecified
  • 2 M BB
  • 1 M soccer
  • 1 Hockey
  • 1 softball
  • 1 Baseball
  • 1 W BB
  • 1 M BB
Results

• LE DVT - 52

12.2%

26 FB  1 Softball  1 M T&F
3 W BB  1 Hockey  1 M BB
1 Rowing  2 Cross Country
1 W Golf  5 Unspecifief
1 W Swim & Dive  2 W Soccer
1 W VB  3 Baseball
2 Soccer  1 M Soccer
# Results

- **Venous TOS - 50**
- **11.7%**

<table>
<thead>
<tr>
<th>2 W Swim &amp; Dive</th>
<th>1 M Wrestle</th>
<th>2 W Rowing</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 M Swim &amp; Dive</td>
<td>8 Softball</td>
<td>1 M Tennis</td>
</tr>
<tr>
<td>11 Baseball</td>
<td>3 M VB</td>
<td>1 M BB</td>
</tr>
<tr>
<td>1 W BB</td>
<td>1 T&amp;F</td>
<td>2 W Soccer</td>
</tr>
<tr>
<td>4 FB</td>
<td>1 M Golf</td>
<td></td>
</tr>
<tr>
<td>2 W Golf</td>
<td>1 W Tennis</td>
<td></td>
</tr>
<tr>
<td>2 W VB</td>
<td>1 Water Polo</td>
<td></td>
</tr>
</tbody>
</table>
Results

- **Arterial TOS** – 29
- **6.8%**
  - 3 FB
  - 4 Baseball
  - 3 Softball
  - 3 M Rowing
  - 2 W T&F
  - 2 Soccer
  - 2 Swim&Dive
  - 5 W VB
  - 2 W Rowing
  - 1 W Golf
  - 1 M Rowing
  - 1 Tennis
Results

• **UE DVT – 25**
• **5.9%**

- 2 Swim & Dive
- 1 W T&F
- 1 W Lacrosse
- 1 W Cross Country
- 8 Baseball
- 1 Rowing
- 2 W BB
- 1 W VB
- 2 Softball
- 2 M BB
- 2 M Wrestle
- 2 W Gym
Results

• **Sternoclavicular Dislocations - 21**
• **4.9%**
  • 12 Football
  • 1 Softball
  • 1 W VB
  • 2 M Lacrosse
  • 1 Equestrian
  • 2 M Soccer
  • 2 W Soccer
Results

• **Pulmonary Embolism – 18**

• **4.2%**

  - 2 W BB
  - 5 FB
  - 1 M Swim & Dive
  - 2 W Soccer
  - 1 M Gym
  - 1 W Gym
  - 1 Golf
  - 1 M Wrestle
  - 1 Cross Country
  - 1 BB
  - 1 W Swim & Dive
  - 1 M BB
Results

• **CVA/TIA – 13**

• **3.1%**

- 1 M BB
- 1 M T&F
- 1 W Cross Country
- 2 M Soccer
- 1 W Soccer
- 1 M Hockey
- 6 FB
Results

• **Lymphedema – 12**
• **2.8%**
• 6 FB
• 3 W Soccer
• 1 Unspecified
• 1 M Soccer
• 1 W T&F
Results

• Varicose Veins – 12
• 2.8%
  • 3 Unspecified
  • 2 M BB
  • 1 Rowing
  • 2 W BB
  • 4 FB
Results

• **Popliteal Artery Injury – 10**
  • 2.3%
  • 1 Soccer
  • 2 W Soccer
  • 3 W Field Hockey
  • 4 FB
Results

• AV Malformations – 7

1 Golf
1 Unspecified
1 Lacrosse
1 W Track & Field
1 M Track & Field
2 Football
Results

- **UE Arterial Injury - 6**
- **1.4%**
  - 1 M golf
  - 1 W Soccer
  - 1 Baseball
  - 1 Gym
  - 2 FB
Results

- Intra-Abdominal Vascular Injury - 5
- 1.2%
- 5 FB
Results

- Lower Extremity Venous Injury – 2
- 0.5%
- 1 W BB
- 1 W Soccer
Results

- Vertebral Artery Dissection – 2
- 0.5%

- 2 Football
Results

- UE Venous Injury – 1
- 0.2%

- Baseball
Results

• LE Arterial Injury – 1
• 0.2%

• Womens Soccer
Results

- **Sports Specific**
  - **Football** 133 (27.4%)
  - Compartment syndrome, LEDVT
  - **Soccer** 60 (14.1%)
  - Compartment Syndrome
  - **Unspecified** 45 (10.6%)
  - Limb Swelling, LE DVT
  - **Baseball** 33 (7.7%)
    - Venous TOS, Arterial TOS, DVT
Results

Basketball 27 (6%)
UE DVT, LEDVT

Softball 19 (4.5%)
Venous TOS, Arterial TOS

T&F 19 (4.5%)
Compartment Syndrome

Swim & Dive 15
Venous TOS, Arterial TOS
Results

- **VB** 14 (3.3%)
  Venous TOS, Arterial TOS, UE DVT
- **Rowing** 13 (3%)
  Venous TOS, Arterial TOS, UE DVT
- **Cross Country** 9 (2.1%)
  Compartment Syndrome
- **Lacrosse** 7 (1.6%)
  Compartment Syndrome, SC Dislocation
Results

**Golf**  8 (1.9%)
Venous TOS

**Gymnastics**  5 (1.2%)
UE DVT, PE

**Field Hockey**  5 (1.2%)
Compartment Syndrome, Pop Art

**Wrestling**
Venous TOS, UE DVT
Summary

- **VTE (Venous TOS, UE DVT, LE DVT, PE)**
  - 145 Cases (34.1%)
- **Compartment Syndrome**
  - 94 cases (22.1%)
- **Limb Swelling/Lymphedema**
  - 78 cases (18.3%)
- **Arterial Injuries**
  - 59 cases (13.8%)
- **ATC** 1 Vascular event/3.5 yrs
DVT Prophylaxis

- No data on appropriate prophylaxis for the injured athlete
- Most orthopedic data derived from THA/TKA
- AAOS Guidelines - ASA
- ACCP Guidelines – acknowledges ASA but prefers LMWH, NOAC, Warfarin
- UGA – ASA if extended immobilization we use Eliquis (apixaban)
Vascular Injuries in Athletics

Thank You