



Upper Extremity Effort Thrombosis of a Minor League Baseball Pitcher

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Introduction

In this review, the athlete reported to his affiliate's athletic training room with swelling in his left arm, and discoloration. He stated that his arm felt "heavy," after throwing the day before. He was referred for emergency treatment, and was diagnosed with an upper extremity deep vein thrombosis (DVT). The athlete then underwent recommended surgery and treatment.

Background

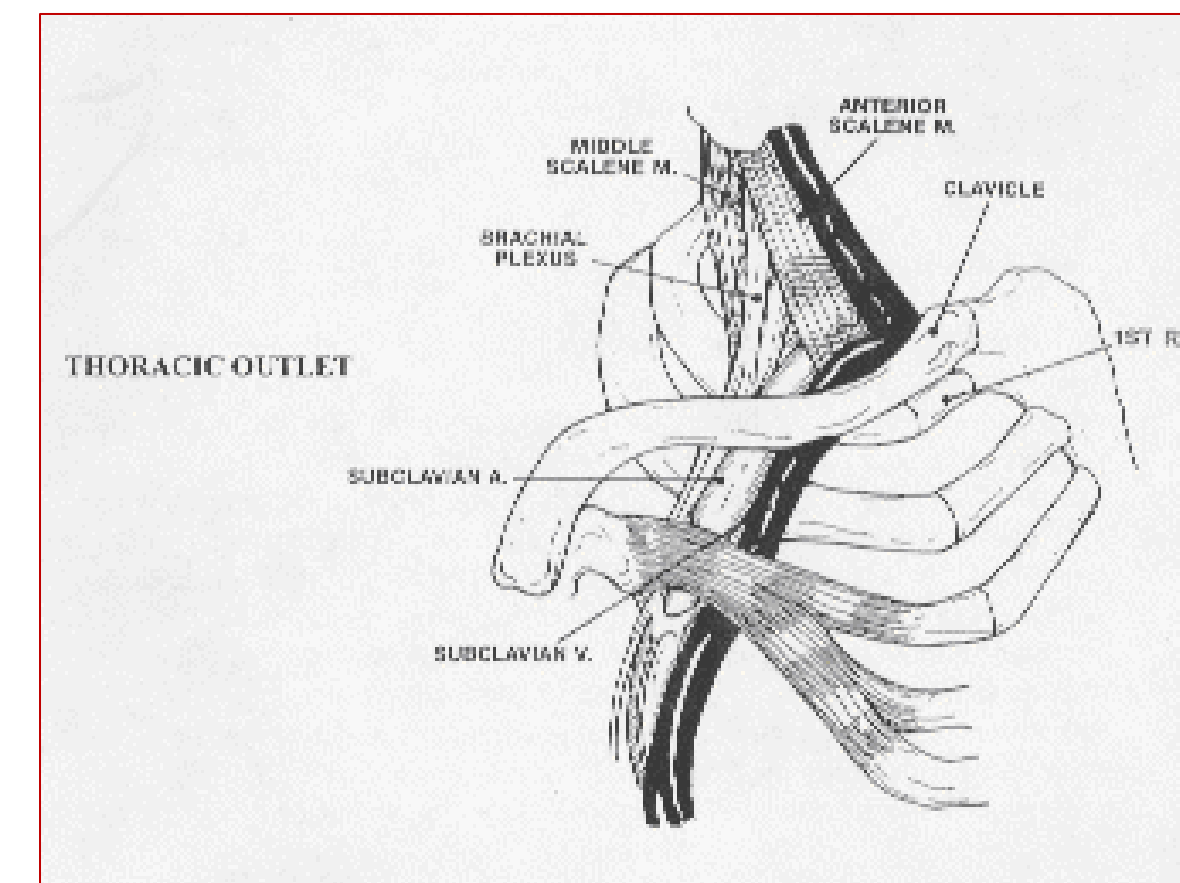
- 22 Year old male
- Left-handed minor league relief pitcher
- Prior History of Tommy John's surgery (to repair a torn Ulnar Collateral Ligament, or Medial Collateral Ligament) on his left elbow in 2010
- No family or previous history of blood clots, or cardiovascular disease.



Purpose

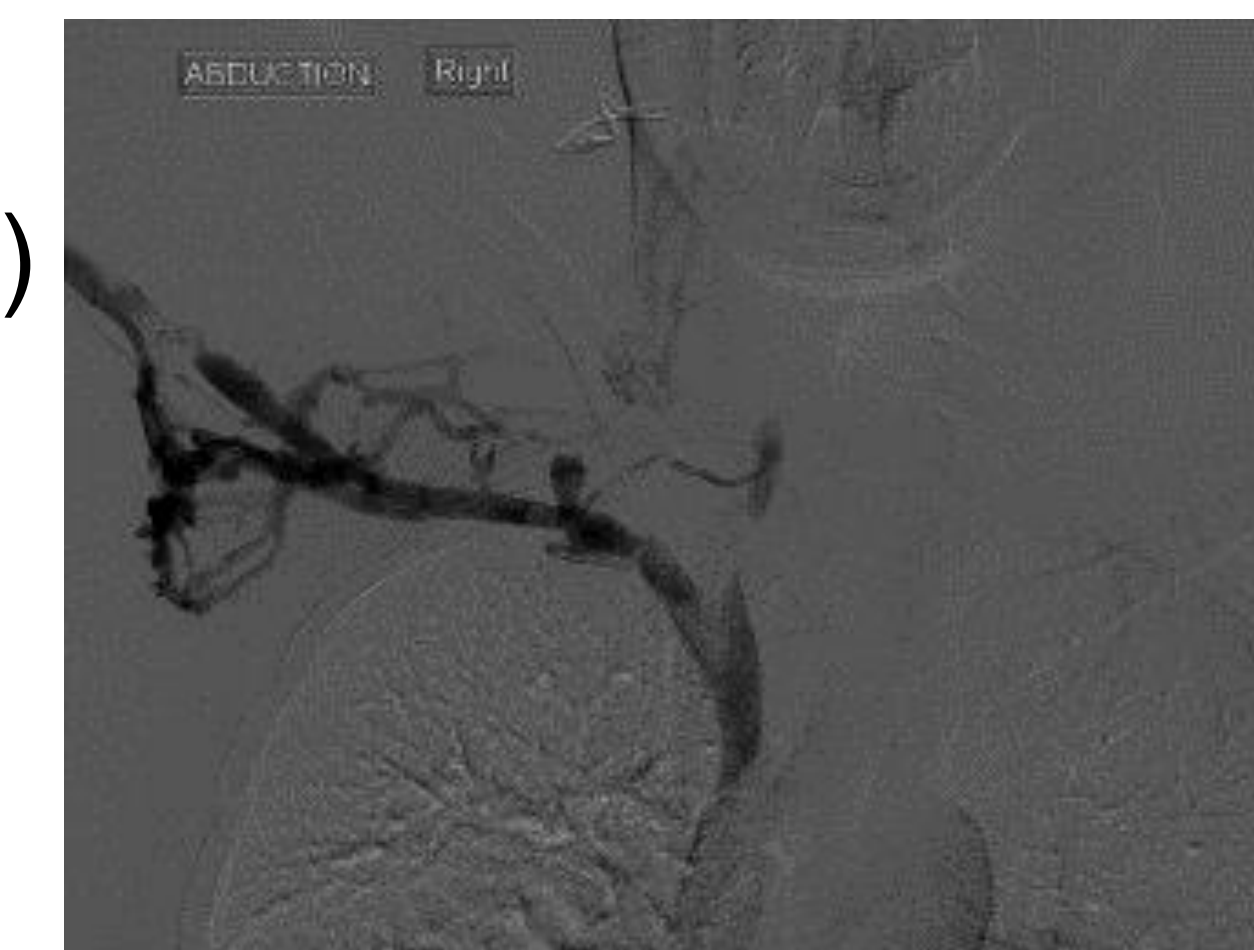
An upper extremity deep vein thrombosis (may also be referred to as Paget-Schroetter's Syndrome or Venous Thoracic Outlet Syndrome) is a relatively rare condition which typically presents in overhead athletes. This condition can be detrimental not only to an athlete's ability to perform and compete, but in more severe cases can be life-threatening as well. Certified Athletic Trainers (ATCs) should be aware of the predisposing factors, signs, symptoms, and treatment of this particular pathology.

- Predisposing factors: performing repetitive overhead motion, forward posture (rounded shoulders), spastic neck musculature.
- Treatment: lysis of the vein to remove the clot, excision of the 1st rib to "open up" the thoracic outlet space, and 3-6 months of anticoagulants.
- Rehabilitation: education of proper shoulder posture, soft tissue therapy to reduce the spasticity of the neck and anterior shoulder muscles.



Clinical Presentation

- Swelling and discoloration of the left hand, wrist, forearm, arm, and shoulder
- Severely forward posture (rounded shoulders)
- Neck and anterior shoulder musculature (Scalenes, Sternocleidomastoid, Pectoralis Major, and Pectoralis Minor) were hypertrophied and spastic.
- Venogram was positive for a clot in the subclavian vein
- Commonly seen in otherwise healthy males
- Other common symptoms include:
 - Visible veins throughout the extremity
 - Pain mimicking a muscle strain
- Special Tests which may be indicative of Upper Extremity DVT:
 - Adson's Maneuver (sensitivity: 79%; specificity: 74-100%)
 - Hyperabduction Test (sensitivity: 84%; specificity: 40%)
 - Wright Test (sensitivity: 70-90%; specificity: 29-53%)



Treatment

- Surgery to remove the first rib was performed to open the thoracic outlet, & vein was lysed to remove the clot.
- The athlete was prescribed anticoagulants following surgery in effort to promote normal blood flow (taken for 3 months).
- The athlete performed shoulder/thoracic mobility exercises, soft tissue therapy, and scapular strengthening exercises to reduce spasticity, and to promote proper mechanics, and shoulder posture.

Implications

- Upper Extremity DVT is most common in sports which require repetitive/vigorous overhead actions (60-80% of patients) such as:
 - Baseball
 - Softball
 - Volleyball
- Predominately occurs in otherwise healthy, males
- Upper Extremity DVT is reported as occurring in two per 100,000 patients each year.
- Without emergency treatment, a high chance of sequelae exists (74%).

Conclusion

This case review presents a rare and potentially fatal disorder which is crucial for ATCs to be able to recognize and diagnose. It is critical for surgery and proper rehabilitation to be performed in an effort to return the affected athlete to prior injury status.