Use of Vortex Ports for Long Term Red Cell Exchange in Sickle Cell Patients

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Sickle Cell Anemia Stroke

Risk of stroke

- 11% patient by age 20
- 50% patients – 2nd CVA within 3 years

Therapy Options for Sickle Cell Anemia

- Prevention of recurrent stroke
- Simple transfusion
  - risk of iron overload
  - complications of iron overload
    eventual multi-organs failure

Current institutional practice for pediatrics – manual red cell exchange to prevent iron overload
Red Cell Exchange – Erythropheresis

- Indications
  - CVA
  - Moyamoya Syndrome
  - Acute Chest Syndrome
  - Perioperative
  - Severe recurrent acute pain

- Maintenance Therapy – post CVA
Need for Ideal Vascular Access for RCE

- Current Practice for Monthly RCE at VCUHS
- First Choice – peripheral access
- Second Choice – permanent implanted ports
- Femoral line only during emergency – one time deal
Implanted Vascular Device

- 2004 – four pediatric patients with iron overload (ages 9 – 16)
- Routine RCE for history of stroke
- Iron overload from multiple transfusion
- Monthly procedure ordered
The Beginning of New Practice for RCE

- The hunt for feasible implanted ports began
- Genesis Vortex – Rita Medical Systems
- 9.6 French – polylurethane
- 2 single ports via right IJ
VCU Experience of 4 Pediatric Patients
Sickle Cell Patients with Two Single Ports
Flow Rate of 60
Flow Rates for Red Cell Exchange

- Pediatric patients
  - 30 to 40 cc/min
- Adult patients
  - Up to 80 cc/min
Key to Success with Vortex Ports

- Educate Interventional Radiologists
  - Have an in-service with IR staff
  - Explain the need for good flow
  - Flush well after procedure
  - Pack well with anticoagulants
  - Consider extension tubing
  - Use ports strictly for RCE and other therapeutic apheresis procedures only.
Any Question?