Neonatal Procedures

- Complicated embolization
- Techniques used
- Cautions and precautions
- Outcomes
- Know when to hold’em

“Children are just small adults”

The procedures are the same...

Needle

Wire

Tube

2 day old in CHF
Preprocedure Eval

- Coagulation parameters
  - Neonates hypercoagulable up to 28 days
- Renal function
  - BUN
  - Creatinine
- Hypothermia
- Hypoglycemia
- Cardiac status
- O2 Sats
- Fluids
- Urine output
- Apnea

Access Tips

- Arterial access
  - Femoral
  - Brachial
  - Umbilical (5 days)

US-guided micropuncture

Pediatric Anesthesia!

- Hypothermia
- Hypoglycemia
- Cardiac status
- O2 Sats
- Fluids
- Urine output
- Apnea

Access Tips

- Arterial access
  - Umbilical

Anatomy of UA

A word of caution!
**Access Tips**

- Arterial access
- Umbilical
- 4 Fr catheter
- No vascular sheath
- Direct to microcatheter

**Medications**

- Heparin
  - Recommended < 15 kg
  - 75-100 IU/kg
- Nitroglycerin
  - 1-3 μg/kg

**Keep track of contrast/flushes**

- Contrast
  - 5 cc/kg neonates
  - 6-10 cc/kg older children
- Small syringes (3-5 cc)
- Use what you need...

**Radiation**

- Use enough to do the procedure

**Arterial embolization (Onyx)**

- 4 Fr angled glide catheter
- Microcatheter
- TJ hepatic vein access
What is this?

PV catheterization via PDV

Pre and post embo

Emboliization in critical neonates

- Uncontrollable heart failure
- Hepatic AVM
- Hepatic hemangioma
- Not always successful...
- Survival 50%

1 w/o - CHF/liver failure

- Arterial coil embolization
- Transjugular balloon occlusion
- Percutaneous NBCA glue

Multiple IR procedures (Died in OR)

3 m/o - Infantile Hemangioma
abdominal compartment syndrome

Glut-1 positive
Undergoes spontaneous involution
Failed partial embolization of hepatic artery → Liver Transplant

Know when to hold ‘em

Know when to hold ‘em

Complications:
697 angios and embos neonates and children

- 14 Non-neuro complications (2%)
  - Contrast allergy
  - Heparin sensitivity
  - Hair loss
  - Bradycardia
  - Groin bleeding
  - Diminished pulses
  - Non-target embolization


Newborn with leg AVM

Newborn prenatally diagnosed liver mass

Cardiac status - stable

RASA – 1 mutation
Parkes-Weber (CM-AVM) Syndrome

Birth
2 months
1 year
Cardiology able to manage CHF

3 Months later…

Rapidly Involuting Congenital Hemangioma

My first case…

+ 3 months

Conclusions

- Neonatal arteriography/embolization
- Always challenging
- Can be life saving when absolutely necessary
- Be aggressive, but be cautious
- Embolization is not always successful
- Know when to hold ‘em

Thank You!
The End

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"... but backwards and in high heels"

Ginger Rogers and Fred Astaire