Simple volumetric ultrasound improves success rates for suprapubic bladder aspiration.

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BACKGROUND

METHODS OF URINE COLLECTION
Suprapubic aspiration (SPA) - best method

- Mid-stream urine
- Self adhesive urine bag
- Bladder catheterization
- Suprapubic aspiration (SPA)
Mid-stream urine

- $10^5$ cfu/ml
- Significant contamination rate
- Sensitivity / specificity debatable
- Void on request

Bag urine

- High rate of contamination (>50%)
- Very poor predictive power for UTI
Catheter Specimen

- Significant contamination rates (unknown)
- Poor predictive power for UTI (unknown)

Suprapubic aspirate

Pros
- Very low contamination rate
- High predictive power for UTI

Cons
- Blind success rate ~50%
- Repeated attempts
- Discomfort
ULTRASOUND

Has been shown to ↑ success rate

• Radiology department scanners >$150,000
• Portable realtime scanners $40,000
• Volumetric bladder scanner $12,000
AIMS

• To determine if a simple volumetric bladder scanner has the potential to improve the success rate of SPA.

METHODS

Two phase prospective study

Phase one
  • To determine a cut off volume under which spa should not be attempted - 10mls.

Phase two
  • RCT of ultrasound vs blind SPA
METHODS 2

- Children under 2-years due SPA for MCS in Emergency Dept.
- Block randomisation
- Sealed envelopes
- Sample size - 55 each group

Success
- SPA successful
- Clean-catch specimen obtained during scan

Blind Group

Dry Nappy

SPA

Success

Failure

Wet or Recent Wet Nappy

Give oral fluids, Wait 30 minutes
Ultrasound Group

RESULTS

<table>
<thead>
<tr>
<th></th>
<th>Blind</th>
<th>Ultrasound</th>
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<tbody>
<tr>
<td>Total (n)</td>
<td>36</td>
<td>39</td>
</tr>
<tr>
<td>Success</td>
<td>16 (44%)</td>
<td>31 (79%)</td>
</tr>
<tr>
<td>Failure</td>
<td>20 (56%)</td>
<td>8 (21%)</td>
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*Fisher's exact test: p<0.005*
CONCLUSIONS

• The volumetric bladder scanner significantly improved the success rate of SPA in children less than two years of age.

Implications

Lower failure rate
• Fewer repeat attempts
• Less reliance on catheter / other specimens
  • fewer children misdiagnosed as UTI
    • fewer children receiving inappropriate Rx for UTI
    • fewer children receiving inappropriate Ix for UTI
  • fewer children with correct diagnosis missed

• Cost effective
  • Cost of misdiagnosed UTI >$1000/case
Acknowledgements

• Bard Australia for loan of BladderScan