Renal Pelvic Dilatation

Follow up of antenatal renal anomalies

A wide range of renal abnormalities may be identified on antenatal fetal ultrasound. The most common of these is renal pelvis dilatation. The renal pelvis dilatation policy applies to infants whose antenatal and postnatal renal ultrasounds have isolated renal pelvis dilatation only. It is a screening policy for isolated pelviureteric junction (PUJ) obstruction.

Infants who have other antenatal or postnatal findings should be referred to the Neonatal Consultant covering the postnatal wards and/or Paediatric Nephrologist (Professor Jonathan Craig at the Westmead Childrens Hospital phone 9845 3431 for appointments or 9845 0000 and have him paged).

Criteria for defining an infant as having isolated renal pelvis dilatation

1. Antenatal renal pelvis >5mm before 20 weeks; >7mm after 32 weeks gestation in the AP dimension
2. Kidneys are normal size
3. Kidneys have normal corticomedullary differentiation
4. Normal renal echogenicity
5. No calyceal dilatation
6. No lower tract dilatation

Renal size (length left; depth right) 3rd to 97th percentile according to birth weight (adapted from Scott JES et al. Ultrasound measurement of renal size in newborn infants. Arch Dis Child 1990; 65: 361-4):
Left: Normal parenchymal echogenicity with good corticomedullary differentiation. Normal, triangular-shaped, hypoechoic renal pyramids.

Right: Abnormal parenchymal echogenicity with poor corticomedullary differentiation. Calyceal dilatation.

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**Mild dilatation on recent antenatal scan (<10mm) obstruction not likely**

1. Arrange renal ultrasound at 3 weeks of age through RPA imaging department.
2. Arrange appointment at 4 weeks (or one week after the ultrasound) with the Neonatologist on for the postnatal wards for that week.
3. That Neonatologist will arrange further scans and outpatient follow up at 6 months, 12 months and 24 months depending upon the persistence and degree of the dilatation.
4. Scanning can be ceased if follow up sonography demonstrates that a PUJ has been reasonably excluded (if the dilatation is < 10mm) on postnatal scans.
5. If the dilatation gets worse consistent with the diagnosis of a pelvi-ureteric junction obstruction, then arrange a MAG3 diuretic renogram through the Westmead Childrens Hospital (9845 2890) and refer to Dr Jonathon Craig, Paediatric Nephrologist at the Westmead Childrens Hospital (appointments 9845 3431).

**Significant dilatation on recent antenatal scan. (>10mm pelvis, OR calyceal dilatation OR bilateral dilatation) Obstruction possible**

1. If mild bilateral antenatal renal pelvis dilatation: check if any of the following criteria are fulfilled on antenatal ultrasound and infant examination. If none present then order a renal ultrasound at 3 weeks with a follow up appointment at 4 weeks with the Neonatologist on call for postnatal wards:
   a. dilatation is mild (<10mm on both sides)
   b. no calyceal dilatation,
   c. normal kidney size and echogenicity,
   d. no lower tract dilatation,
   e. no oligohydramnios, and
   f. normal physical examination (no palpable bladder or enlarged kidneys), normal urine stream observed
2. **If any of the above risk factors are present:** confirm severity of renal pelvic dilatation with a postnatal renal ultrasound on day 2 or 3.

3. If dilatation confirmed significant (>10mm) OR other renal abnormality then discuss with Professor Jonathan Craig, Paediatric Nephrologist at the Westmead Childrens Hospital (9845 3431 or 9845 0000 and have him paged).

4. In general if the dilatation is unilateral, they will need a MAG3 diuretic renogram and subsequent a follow up with Professor Jonathan Craig, Paediatric Nephrologist at the Westmead Childrens Hospital, between 1 and 2 months of age (appointments: 9845 3431).

5. If the dilatation is bilateral, the baby will need full investigation prior to discharge (early measurement of serum creatinine (see below for normal range), a day 1 ultrasound and a micturating cystogram in boys).

6. Prophylactic antibiotics should be considered until obstruction has been ruled out or until an MCU (if indicated) has been performed in boys.

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**Normal renal function**

Plasma creatinine inversely correlates with body weight (and gestational age) during the first days of life. Reaches steady neonatal levels by 3 to 4 weeks of life.\(^3\)

![Graph showing plasma creatinine levels over postnatal age](image)


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**References**


*Updated: August 2009 A/Prof David Osborn*