

## Department of Paediatric Nephrology

### HAEMATURIA INVESTIGATION PROTOCOL

A Paediatric Nephrology consultant is always on call at the RVI to offer advice.

#### *Routine assessment*

#### 1) Clinical examination (including measurement of systolic blood pressure)

#### 2) Urine

- **Phase contrast microscopy of *fresh* unspun urine** (From the red blood cell (RBC) morphology it is often possible to tell whether they are from the glomerulus (irregular/misshapen RBC outline) or the bladder (regular spherical RBCs). If there is any doubt ask a member of the renal team to check the morphology. If the cells are ***definitely*** non-glomerular, arrange an urgent abdominal ultrasound scan and refer to a Paediatric Urologist.
- **Dipstick urine for protein**
- **Early morning (first voided) urinary protein/creatinine ratio** (Normal range <20mg/mmol. Significant proteinuria is >40, nephrotic range is >200. Normal range for albumin/creatinine ratio is <8.5 mg/mmol)
- **Urinary calcium/creatinine ratio** (Normal range <0.8mmol/mmol. Second urine of the day (no need for a timed collection).
- **Urine L-glyceric acid to creatinine ratio** (sent via our lab to UCL)
- **Urine oxalate to creatinine ratio**
- **Family screening of urine** (Consider audiology of males if a family history.)

### 3) Bloods

- Urea and electrolytes, creatinine, calcium, liver function tests
- Full blood count + film + ESR
- Clotting
- C3 and C4
- Autoantibody screen (ANA, dsDNA, ANCA)
- Immunoglobulins
- Antistreptolysin O titre (ASOT)

### 4) Radiology

- Ultrasound scan of renal tract

#### ***When to refer?***

- In the absence of proteinuria, glomerular haematuria in general carries an excellent prognosis. If this persists for >6 months however, refer for infrequent follow up by the Children and Young People's Kidney Team. Haematuria and proteinuria should be referred to the team.
- If significant proteinuria is present however, consider urgent referral to renal team.
- If any of the above investigations are abnormal consider referral also.

#### ***Additional notes***

- A third of urinary tract infections are associated with haematuria, which is usually microscopic. Urine infection is however the commonest cause of macroscopic haematuria.
- Take a full drug history. The following agents (not an exhaustive list) can produce haematuria: anticoagulants, antibacterials (e.g. penicillin, ampicillin, sulphonamides), solvents (e.g. carbon tetrachloride), indomethicin, amitriptyline, chlorpromazine, phenylbutazone.
- Haemoglobinuria, which occurs with intravascular haemolysis, will produce a positive result for blood on dipstick test but no red blood cells are seen on urine microscopy. ***False positive results on dipstick can also occur in the absence of haemolysis (i.e. rhabdomyolysis when CPK needs to be checked).***

#### ***Follow up***

- Yearly urine dipstick and blood pressure. If/when proteinuria and/or hypertension is (are) recorded measure uA/uC and re-refer to the nephrology team. A significant number of patients will continue with isolated haematuria only. They should be seen in nephrology clinic at age 16-18 in order to be given information and follow up options.

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