Acute Glomerulonephritis

- Abrupt onset of obvious macroscopic hematuria
- Oliguria
- Sudden decrease in glomerular filtration rate
- Proteinuria below nephrotic range (<3g/day)
- OEDEMA occurring as a result of sodium retention and not hypoalbuminaemia

**IT'S ALMOST ALWAYS A POST-INFECTIONOUS SITUATION!**

**Triggering Events:**
- POST-INFECTIONOUS eg. post-streptococcal
  - Mainly in young children with a runny nose
  - Occurs ~2weeks after the initial infection
  - Mediated by immune-complex deposition AND by the accumulation of streptococcal antigens in the glomerular filtration membrane... which then attract all kinds of immune retribution, mainly in the shape of angry complement and macrophages.

**Natural History**

Strep infection;

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>1-2 weeks</td>
<td>Onset of oedema + hemoproteinuria</td>
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<tr>
<td>1-2 weeks</td>
<td>Oedema and hemoproteinuria with massively elevated creatinine and Na+</td>
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<tr>
<td>1-2 weeks</td>
<td>Wild diuresis</td>
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<tr>
<td>1-2 weeks</td>
<td>Of continuing creatinine abnormalities, tapering off;</td>
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<tr>
<td>6 months</td>
<td>Of hematuria</td>
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<tr>
<td>X years</td>
<td>Of proteinuria (variable; persists for 10 years in 2% of patients)</td>
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**RESOLVES SPONTANEOUSLY! No cause for dismay**

**Diagnostic Side-Dishes**

Certain immunological changes take place in post-infectious GN, and these can be employed to point the way towards a diagnosis.

**COMPLEMENT** components, esp. C3 are depressed during the early course.

**STREPT ANTI-BODIES** won't diagnose post-strep GN for you, but they will tell you if a strep infection has taken place recently.

**MANAGEMENT** IS SUPPORTIVE and consists of....

**MANAGING FLUID OVERLOAD** with diuretics

**MANAGING HYPERTENSION** which results from fluid overload with conventional agents

**Creatinine**: measure of GFR

Released from skeletal muscle at a steady rate; high level is associated with large muscle mass and exercise.

**High creatinine better be found in a large well-muscled patient, not a frail 90 yr old woman.**

Thus in a hypovolemic patient the GFR will drop and thus the *serum creatinine* will **RISE**

Normal creatinine = GFR must be OK

**FILTRATION RATE**: ~100 ml per minute;

= Carefully controlled!

Very steady between 90 and 200 systolic

Only extremes of blood pressure influence the GFR.

**INCREASED BP** = reflex contraction of smooth muscle in afferent arteriole, thus reduced flow still means GFR maintained at the same level

**BIOPSY** with immunofluorescence and electron microscopy is the **ONLY MEANS OF DIAGNOSIS**...

and you may not want to biopsy the kidneys of that chubby 5 year old boy

Only 1 or 2% of post-strep GN patients progress to ESRF