

Renal Disease in Pregnancy

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Physiology in Pregnancy

- Dilatation of urinary collecting system (R>L)
- 60-80% increase in renal plasma flow
- 50% increase in glomerular filtration rate
- Physiological sodium and water retention.
80% develops oedema

Disease and Pregnancy

- Disease has an effect on pregnancy
- Pregnancy has an effect on disease

Chronic Renal Disease

- Effect of pregnancy on chronic renal disease:
 - Possible accelerated decline in renal function
 - Hypertension
 - Worsening proteinuria

Effect of Pregnancy on Renal Impairment

Creat	<170 μ mol/l	<220 μ mol/l	>220 μ mol/l
Loss of function	40%	65%	75%
Post partum deterioration	20%	50%	60%
End-stage renal failure	2%	33%	40%

Renal Impairment Effect on Pregnancy

- ↑ risk of adverse pregnancy outcome – PET, IUGR, Prematurity
- Urea > 10 mmol/l → osmotic load → fetal polyuria → polyhydramnios
- Urea >20 mmol/l → risk fetal death

Factors Influencing Pregnancy Outcome

- Presence/degree of renal impairment
- Presence/severity of hypertension
- Presence/severity of proteinuria
- Type of chronic disease

Degree of Renal Impairment

- Mild: creat $< 125 \mu\text{mol/l}$
- Moderate: creat between 125 and 250 $\mu\text{mol/l}$
- Severe: creat $>250 \mu\text{mol/l}$
- Absolute creatinine levels to be seen in context with patients weight
- Severe renal impairment: advise against pregnancy

Effect of Degree of CRD on Pregnancy Outcome

	Mild	Moderate	Severe
PET	25%	50%	85%
IUGR		30%	60%
Preterm		55%	70%
Success	85 – 95%	60 – 90%	20 – 30%

Glomerulonephritis

- Most pregnancies successful
- Hypertension → ↑ risk PET
- 20% fetal loss/preterm delivery
- Normal renal function at conception → pregnancy does not effect the course of renal disease or occurrence of end-stage renal failure

Reflux Nephropathy

- ↑ risk of PET as well as hypertension
- If renal impairment → may experience rapid worsening of renal function
- Association with severe IUGR
- May be inherited autosomal dominant → investigate offspring

Diabetic Nephropathy

- Double the risk for maternal complications and adverse pregnancy outcome
- Risks: PET, UTI, Proteinuria, oedema
- 30% have preterm delivery
- 50% have hypertension

Management

- Pre-pregnancy counseling:
 - Pre-conceptual renal function and BP
- Manage with nephrologist
- TOP if necessary
- Good control of hypertension important to preserve renal function

Management

- Regular assessment: creatinine clearance and 24 hr protein excretion, urea & creat
- Fetal monitoring for IUGR
- Place for biopsy:
 - Early pregnancy
 - Treatable lesion suspected

Dialysis

- Chance of successful pregnancy low (30%)
- Risks:
 - Miscarriage
 - IUD
 - Hypertension and PET
 - Preterm labour, pProm
 - Polyhydramnios
 - Abruptio

Acute Renal Failure

- Rare in pregnancy
- Causes:
 - Infection (septic ICA, puerperal sepsis)
 - Blood loss (PPH, Abruptio)
 - Volume depletion (PET, hyper emesis)
 - Post renal failure (ureter damage/obstruction)
 - Drugs (NSAIDs)

Renal Transplant

- If renal function normal → ovulation → return of fertility
- Wait 2 years post transplant
- Pregnancy outcome dependant on baseline serum creatinine levels (as for CRD)

Effect of Pregnancy on Renal Transplant

- No effect if creat $< 100 \mu\text{mol/l}$
- Creat $>130 \mu\text{mol/l}$: renal graft survival only 65% after 3 years
- 15% develop significant impairment of renal function
- Same physiological changes as in normal kidneys

Effect of Pregnancy on Renal Transplant

- 40% develops proteinuria
- 10% women die within 1 –7 years after pregnancy and 50% within 15 years

Effect of Renal Transplant on Pregnancy

- Optimal outcome:
 - Without hypertension, proteinuria
 - No graft rejection
 - Normal or near normal function at conception
- Immunosuppressive drugs
 - Pre-pregnancy doses
 - Must continue to use

Effect of Renal Transplant on Pregnancy

- Problems:
 - Hypertension/PET
 - Graft rejection
 - IUGR
 - Preterm delivery
 - UTI