



Approach to Treatment and Follow-up of Lupus Nephritis

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Overview

- Diagnosis
- **Immunosuppression**
- **Follow-up**
- Tips
- Summary

Goals

- Recognize
 - Toxicity of treatment
 - Flare of the disease

Diagnosis

- Previous rheumatological diagnosis of SLE
- Clinical presentation
 - Rashes
 - Arthritis
 - Mouth ulcers
 - Hair loss
- Serologies
 - ANA
 - dsDNA
 - C3/C4

Lupus Nephritis

- Maybe hematuria/proteinuria
 - Class I and II
- More hematuria/proteinuria +/- increased Creatinine
 - **Class III and IV**
- Nephrotic Syndrome
 - **Class V**
- Very low kidney function
 - Class VI

Immunosuppression

- Disease-control
 - Hydroxychloroquine
- Induction
 - 3-6 months
 - Corticosteroids
 - Cyclophosphamide
 - MMF
- Maintenance
 - 1-3 years
 - MMF
 - Azathioprine
 - Corticosteroids

Immunosuppression

- Hydroxychloroquine (HCQ)
 - Aka Plaquenil
 - Common S/Es:
 - Gastrointestinal upset
 - Headaches
 - lightheadedness
 - Rare S/Es:
 - Retinal toxicity
 - Rash
 - Photosensitivity
 - Myopathy
 - Seizures/psychosis
 - Annual eye exam required

Immunosuppression

- Corticosteroids

Adverse effects

- Occur with prolonged use of high doses
- Cushing's disease

Psychiatric

- Sleep disturbance/activation
- Mood disturbance
- Psychosis

Skin/soft tissue

- Cushingoid appearance
- Abdominal striae
- Acne
- Hirsutism
- Oedema

Neurologic

- Neuropathy
- Pseudomotor cerebri

Cardiovascular

- Hypertension



MSK

- Osteoporosis
- Aseptic necrosis of bone
- Myopathy

Endocrine

- Diabetes mellitus
- Adrenal cortex suppression

Immunologic

- Lymphocytopenia
- Immunosuppression
- False-negative skin test

Ophthalmic

- Cataract
- Narrow-angle glaucoma

Developmental

- Growth retardation

Side Effects of Corticosteroids



Immunosuppression

- Corticosteroids
 - Stomach protection
 - H₂R blocker or PPI
 - Bone protection
 - Calcium
 - Vitamin D
 - ?Bisphosphonate
 - ?PJP PNA prophylaxis
 - Septra

Immunosuppression

- Cyclophosphamide
 - S/Es:
 - Infertility (men and women)
 - Myelosuppression
 - Hemorrhagic cystitis
 - Malignancy
 - Non-melanoma skin cancer
 - Bladder
 - Leukemia
 - Alopecia
 - Infection

Immunosuppression

- Cyclophosphamide
 - Monitoring
 - Biweekly CBCs
 - Periodic urine cytology in future
 - Contraception

Immunosuppression

- MMF
 - Aka CellCept
 - Antimetabolite
 - S/Es
 - Gastrointestinal upset
 - Leukopenia
 - Pregnancy loss/congenital malformations
 - Pain/fever
 - UTI

Immunosuppression

- MMF
 - Monitoring
 - CBC
 - Contraception

Immunosuppression

- AZA
 - Antimetabolite
 - S/Es
 - Bone marrow depression
 - Diarrhea
 - Hepatotoxicity
 - Drug interaction with Allopurinol

Immunosuppression

- AZA
 - Monitoring
 - CBC
 - Liver enzymes

Monitoring

- Renal function
- Proteinuria
- Clinical
- Serologies
- ?Re-biopsy

Monitoring

- Renal function
 - Assess response of treatment with Cr change

Monitoring

- Proteinuria
 - Urine ACR
 - Urine PCR
 - 24 hour urine collection

Monitoring

- When should I order a 24 hour urine protein collection?
 - Most accurate method if performed correctly
 - If UACR/PCR rising
 - Always include a 24 hour creatinine to assess completeness



Monitoring

- Proteinuria

Table 27 | Definitions of response to therapy in LN

Complete response: Return of SCr to previous baseline, plus a decline in the uPCR to <500 mg/g (<50 mg/mmol).

Partial response: Stabilization ($\pm 25\%$), or improvement of SCr, but not to normal, plus a $\geq 50\%$ decrease in uPCR. If there was nephrotic-range proteinuria (uPCR ≥ 3000 mg/g [≥ 300 mg/mmol]), improvement requires a $\geq 50\%$ reduction in uPCR, and a uPCR <3000 mg/g [<300 mg/mmol].

Deterioration: There is no definition of deterioration in LN to define treatment failure that has been tested prospectively as an indication to change in initial therapy. A sustained 25% increase in SCr is widely used but has not been validated.

Monitoring

- Clinical
 - Symptoms of Lupus
 - Previous symptoms of a flare
 - General
 - Rheum
 - Genitourinary
 - Cardiovascular
 - Respiratory

Monitoring

- Serologies
 - C3/C4
 - dsDNA
 - ANA

Monitoring

- When to consider another biopsy?
 - Failure to achieve CR or PR 1-2 years after treatment
 - Sudden worsening of renal function or proteinuria

Tips

- Are they adherent to treatment?
- Did they have a previous response to immunosuppression?
- Did they have previous adverse effects to immunosuppression?

Tips

- Pregnancy considerations
 - Delay until in remission
 - Do not use **ACEI/ARB, cylophosphamide, MMF**
 - HCQ should be continued
 - AZA okay
 - ASA

Summary

- Immunosuppression
 - Cyclophosphamide
 - Infertility
 - Cancers
 - MMF
 - GI
 - leukopenia
 - AZA
 - Bone marrow suppression
 - hepatotoxicity

Summary

- Follow-up
 - Renal function
 - Proteinuria
 - Serologies

KCC

Peter Birks

