

Glomerulonephritis & Nephrotic Syndrome

Acute Nephritic Syndrome

- Acute renal insult i.e. Over few days
- Oliguria
- S.Creat- increased
- Oedema
- Gross Hematuria
- Active Urinary Sediment
- Proteinuria

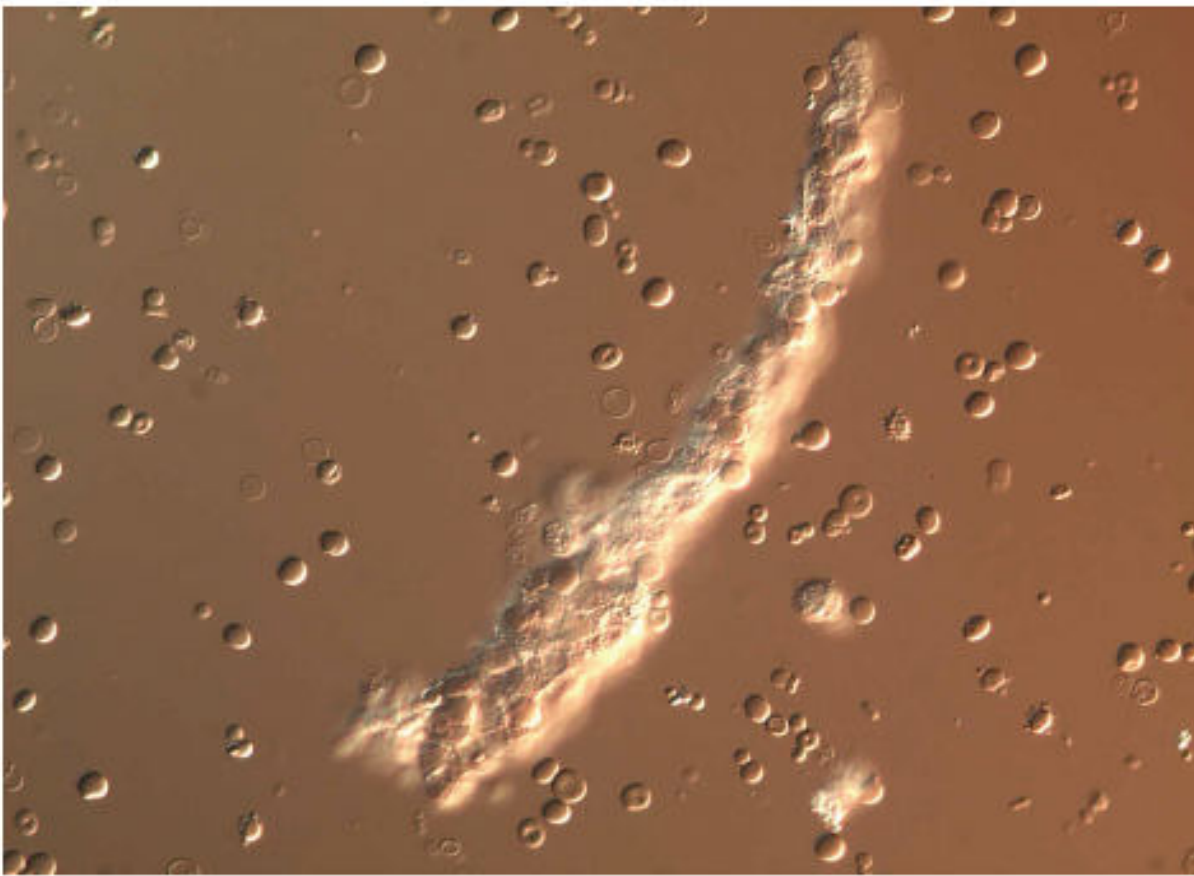


Figure 25.1 Red blood cell cast and acanthocytes consistent with glomerular bleeding (diffusion interference contrast optics). (Courtesy Dr. Rajiv Agarwal, Nephrology Division, Indiana University School of Medicine, Indianapolis.)

Causes

Low Serum Complement Levels

Systemic Diseases (Low C3 and C4)

Systemic lupus erythematosus
Cryoglobulinemia (hepatitis C)
Bacterial endocarditis
Shunt nephritis

Renal Localized Diseases

Acute poststreptococcal glomerulonephritis (low C3, normal C4)
Membranoproliferative glomerulonephritis
Type I (low C3 and C4)
Type II (dense deposit disease) (low C3, normal C4)

Normal Serum Complement Levels

Systemic Diseases

Polyarteritis nodosa
Antineutrophil cytoplasmic antibody–positive granulomatosis with polyangiitis (Wegener’s granulomatosis)
Hypersensitivity vasculitis
Henoch-Schönlein purpura
Goodpasture’s syndrome

Renal Localized Diseases

Immunoglobulin A nephropathy
Rapidly progressive glomerulonephritis
Anti–glomerular basement membrane disease isolated to kidney
Pauci-immune glomerulonephritis (kidney-localized)

Table 25.4 Blood Studies for Acute Nephritic Syndrome

Routine

Complete blood count
Electrolyte levels
Blood urea nitrogen and creatinine concentrations
Liver function studies
Complement levels (total hemolytic complement [CH₅₀], C3, C4)

As Clinical Findings Suggest

Anti-DNA antibody test
Antineutrophil cytoplasmic antibody (ANCA) titer
Anti–glomerular basement membrane antibody test
Antistreptolysin O titer or streptozyme test
Cryoglobulin titer
Hepatitis B and C antibody assay and viral load determination
Human immunodeficiency virus test
Blood cultures

Treatment

- Treat Oedema
- Treat Hypertension
- Treat the underlying cause
- Treat Renal dysfunction

Nephrotic Syndrome

Nephrotic syndrome has historically been considered to include five principal clinical or biochemical findings:

1. High-grade, albumin-dominant proteinuria (generally >3000 mg/day or spot urine protein/creatinine ratio of >3000 mg of protein/gm of creatinine)
 2. Hypoalbuminemia
 3. Edema
 4. Hyperlipidemia
 5. Lipiduria
-



Figure 15-2 Nephrotic edema. Periorbital edema in the early morning in a nephrotic child. The edema resolves during the day under the influence of gravity.



Figure 15-3 Nephrotic edema. Severe peripheral edema in nephrotic syndrome; note the blisters caused by intradermal fluid.



Figure 15-4 Muehrcke lines (bands) in nephrotic syndrome. The white line grew during a transient period of hypoalbuminemia caused by the nephrotic syndrome.



Figure 15-5 Xanthelasma in nephrotic syndrome. These prominent xanthelasma developed within 2 months in a patient with recent onset of severe nephrotic syndrome and serum cholesterol level of 550 mg/dl (14.2 mmol/l).

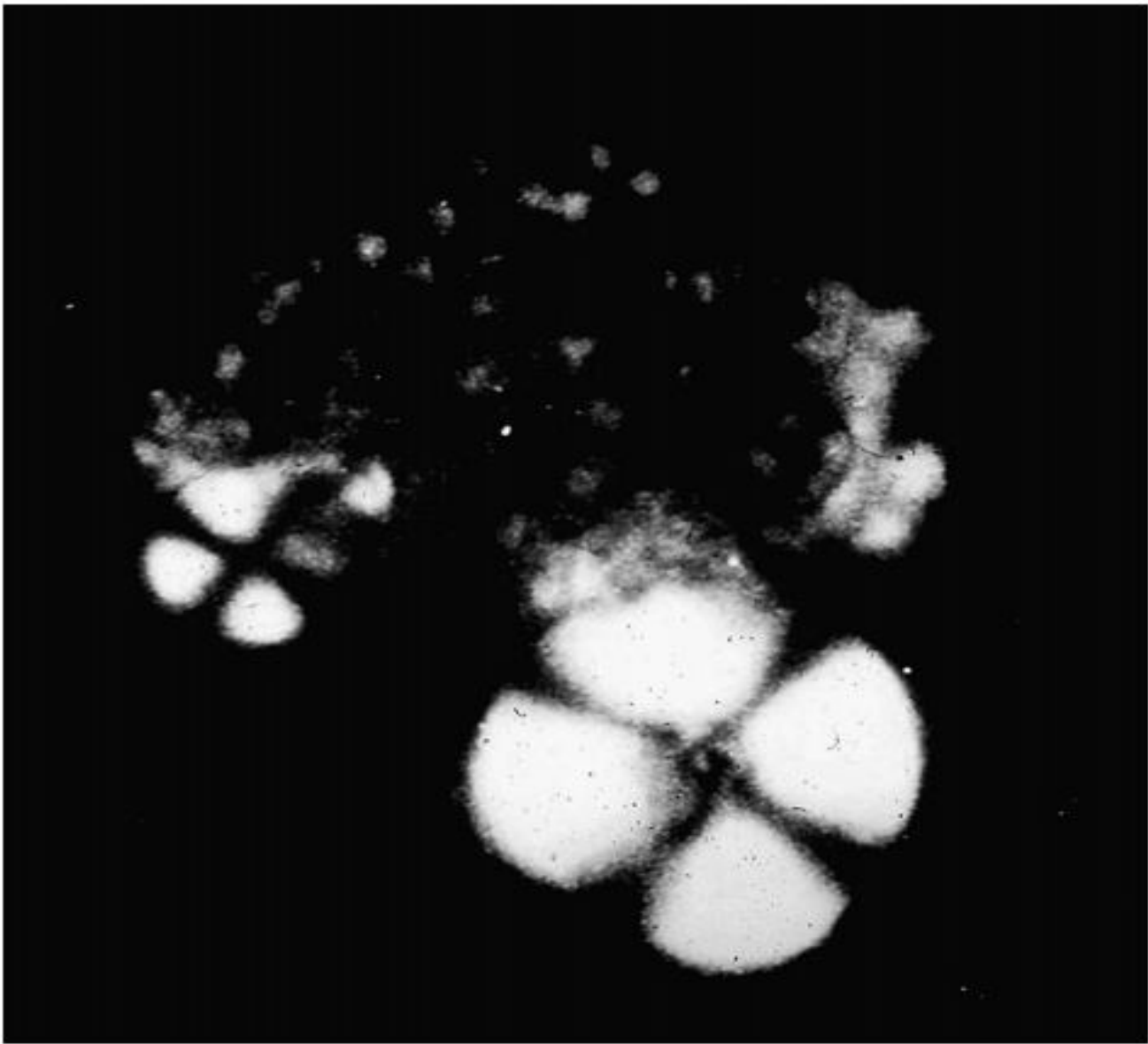


Figure 25.4 Lipiduria. Shown are birefringent cholesterol crystals seen with polarizing light microscopy

Types

- Primary (Idiopathic)
- Secondary

Table 25.5 Causes of Secondary Nephrotic Syndrome

Systemic Diseases

- Diabetes mellitus
- Systemic lupus erythematosus
- Amyloidosis
- Carcinoma
- Lymphoma and myeloma
- Preeclampsia
- Drugs
 - Gold
 - Antibiotics
 - Nonsteroidal antiinflammatory drugs
 - Penicillamine
 - Heroin
- Infections
 - Human immunodeficiency virus infection
 - Hepatitis B and C
 - Malaria
 - Syphilis

Congenital or Inherited Disorders

Age-related Variations in Nephrotic Syndrome						
		Prevalence (%)				
		Child (<15 years)	Young Adult		Middle and Old Age	
			Whites	Blacks	Whites	Blacks
Minimal change disease (MCD)	78	23	15	21	16	
Focal segmental glomerulosclerosis (FSGS)	8	19	55	13	35	
Membranous nephropathy (MN)	2	24	26	37	24	
Membranoproliferative glomerulonephritis (MPGN)	6	13	0	4	2	
Other glomerulonephritides	6	14	2	12	12	
Amyloid	0	5	2	13	11	

Differentiation Between Nephrotic Syndrome and Nephritic Syndrome		
Typical Features	Nephrotic	Nephritic
Onset	Insidious	Abrupt
Edema	++++	++
Blood pressure	Normal	Raised
Jugular venous pressure	Normal/low	Raised
Proteinuria	++++	++
Hematuria	May/may not occur	+++
Red blood cell casts	Absent	Present
Serum albumin	Low	Normal/slightly reduced

Table 15-4 Differentiation between nephrotic syndrome and nephritic syndrome.

Treatment

- Treatment of oedema
- Treatment of Hyperlipidemia
- Treatment of Hypertension
- Treatment of Infection
- Treatment of the underlying cause

Immunosuppression

- Steroids
- CNIs
- MMF
- Cyclophosphamide
- Rituximab

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