Occasional survey

Pediatric renal problems in India

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Abstract. In India, socioeconomic and geographic factors greatly influence the prevalence and outcome of renal diseases in children. The subspecialty of pediatric nephrology is only established at a few centers and adequate facilities for the management of renal problems are not widely available. The prevalence and pattern of idiopathic nephrotic syndrome, congenital renal anomalies, systemic renal diseases and urinary tract infections are similar to those reported from Europe and the United States. Poststreptococcal acute glomerulonephritis is frequently seen. Henoch-Schönlein nephritis and IgA nephropathy are comparatively uncommon. Important causes of acute renal failure are dysentery with or without the hemolytic uremic syndrome, acute intravascular hemolysis in G-6-PD-deficient subjects and sepsis in infants as well as snakebite and other kinds of envenomation in coastal regions. Aortoarteritis (Takayasu's disease) is a frequent cause of hypertension. Vesical calculus disease is very common in some parts of the country. Long-term dialysis and renal transplantation have only occasionally been performed.

Key words: Renal pathology — India — Acute renal failure — Dysentery — o-6-PD deficiency — Takayasu's disease

Introduction

The subspecialty of pediatric nephrology is still in its infancy in India. Renal diseases in children are common and often complex, requiring considerable expertise in their management. Limited diagnostic and therapeutic facilities, however, have had a negative influence on the outcome for most children with renal diseases in the subcontinent. With the exception of neonatology, all pediatric subspecialties are poorly developed. The major problems of children in India include a high infant mortality rate, malnutrition, gastroenteritis, other preventible infections and tuberculosis. Consequently, major inputs have gone into tackling these problems. There are very few centers in the country which can provide training in pediatric subspecialties and, of late, it is becoming increasingly difficult to obtain such training at advanced centers abroad.

In contrast to the situation in pediatrics, adult nephrology is reasonably well established. An Indian Society of Nephrology was formed in 1970 and has approximately 200 members. There are about 24 divisions or full departments of nephrology in various parts of the country. A number of them have active dialysis and transplantation programs, some of which also look after children. A pediatric nephrology group has been established recently and has 25 active members, some of whom have received formal training in pediatric nephrology at advanced centers. A division of pediatric nephrology has been in existence at the All India Institute of Medical Sciences, New Delhi, since 1969.

Pattern of pediatric renal disorders

Socioeconomic and geographic factors greatly influence the prevalence and outcome of renal diseases in children in India. For example, acute renal failure (ARF) has very different causes and a poorer recovery rate than that observed in advanced countries. It is most frequently related to
gastrointestinal infections, which result primarily from contamination of drinking water. Acute intravascular hemolysis in glucose-6-phosphate dehydrogenase (G-6-PD) deficient subjects also results in ARF. The incidence of poststreptococcal acute glomerulonephritis (PSAGN) remains high in most parts of India, while it has declined in the United States and Europe. Other conditions which are particularly common include bladder stones and idiopathic aortoarteritis (Takayasu’s disease), which is a major cause of renovascular hypertension. Parasitic disorders, such as malaria, kala-azar and filariasis are frequent in certain parts of India. However, the nephropathy associated with malaria that has been reported from some African countries does not seem to occur in India. Schistosomiasis or an endemic nephropathy such as that observed in the Balkan countries, or familial Meditarranean fever have not been reported.

Nephrotic syndrome

Nephrotic syndrome remains the most common renal disorder managed by pediatric nephrologists in India. We have, over a period of 15 years, seen almost a thousand children with this syndrome. Such a high number probably does not reflect the true incidence, since our institute is a referral center for northern India.

The pattern of diseases responsible for nephrotic syndrome in Indian children is very similar to that seen in Europe and the United States [1]. More than 95% of cases are idiopathic. The clinicopathologic features have been reported previously [1]. Patients with minimal change disease (MCNS) constitute about 80% of cases; boys predominate (70%) and in about 60% the age at onset of disease is between 2 and 6 years. About 95% of our MCNS patients are corticosteroid responsive. Among these the incidence of infrequent relapses is 40%, 35% have frequent relapses, 20% are steroid dependent and 5% develop late steroid dependence using the definitions developed by the International Study of Kidney Diseases in Children. We have used an 8-week course of cyclophosphamide with alternate-day prednisolone as the standard regimen in patients with unsatisfactory responses to steroids. Beneficial results, as assessed by longer remissions and decreased frequency of relapses, have been obtained, particularly in patients who were older when therapy with cyclophosphamide was instituted [2].

The renal morphological transition from minimal lesion to focal segmental glomerulosclerosis (FSGS) has been observed in some of the 5% of patients who develop late steroid resistance [3]. These patients tended to have a poor prognosis.

The incidence of secondary infections is high in our patients in relapse from nephrotic syndrome. The clinical features are often vague and serious infections may develop very rapidly. Indeed peritonitis, pneumonia and pyogenic meningitis are still responsible for mortality in a small proportion of cases. The problem of infections may justify a more liberal use of immunosuppressive therapy or some other regimen of prednisone in an attempt to keep the patients in remission.

Secondary nephrotic syndrome accounts for less than 5% of cases. The main causes include amyloidosis, which is associated with chronic pyogenic infections, tuberculosis and juvenile rheumatoid arthritis, Henoch Schönlein vasculitis and systemic lupus erythematosus (SLE). Other glomerulonephritides are also associated with nephrotic syndrome in some patients. Viral hepatitis B is common in the population and there is a high carrier rate for hepatitis B surface antigen (HBsAg) in the blood. A prospective study was undertaken in 32 patients with nephrotic syndrome who had a lesion other than MCNS on renal biopsy. The presence of HBsAg was looked for in the blood and in the renal biopsy specimen using immunofluorescent staining. Only 2 patients gave positive results. Both had a membranous nephropathy. The liver biopsy revealed an active chronic hepatitis in one and cirrhosis in the other. HBsAg was demonstrated in the liver in both cases.

Glomerulonephritis

Acute glomerulonephritis

Poststreptococcal acute glomerulonephritis is common in India, although the number of such cases seen at this center has fallen considerably during the last few years. The disorder follows either streptococcal pharyngitis or pyoderma, which are common in overcrowded communities with poor hygiene conditions. They predispose to glomerulonephritis in almost equal proportions. The clinicopathological profile is similar to that in other countries [4]. There is significant mortality in the acute stage from complications such as hypertensive encephalopathy and pulmonary edema, and in the occasional patient with crescentic GN. All others recover completely. We have not observed slow evolution of PSAGN into chronic glomerulonephritis.