

EDITORIAL

Kidney disease in children. A public health problem

Mara Medeiros Domingo and Ricardo Muñoz Arizpe

According to international guidelines, kidney disease is defined as kidney damage (structural or functional) that remains for 3 months or more, with or without decreased glomerular filtration rate (GFR), and demonstrates any of the following findings: 1) alteration in the composition of blood or urine, 2) alteration in imaging studies, or 3) impaired renal biopsy or those patients who have a GFR <60 mL/min/1.73 m² SC, with or without other signs of previous damage described.¹

In Mexican adults the main causes of end-stage renal disease (ESRD) are diabetes and hypertension. In children, however, in most cases accurate diagnosis of the cause of uremia is difficult due to delayed onset of seeking medical care. The major known causes include congenital malformations (dysplasia, hypoplasia, urinary malformations) followed by glomerulopathies.²

In this issue of *Boletín Médico del Hospital Infantil de México* (BMHIM) there are two articles related to kidney disease that focus attention on this serious public health problem. The study of Ríos-Moreno and Patiño-García reports the characteristics of the nephrotic syndrome (NS) outside the usual age in a hospital in Guadalajara, noting that NS represents 6.1% of the consultations of a pediatric hospital and is the third leading cause of hospitalization in the nephrology service.³

Both for children and adults a change in the epidemiology of NS has been reported with an increased incidence of focal and segmental sclerosis from 23-50%, depending on the series consulted.^{4,5} The causes of this increase are not well known. Among the explanations for this phenomenon are racial mix because it is known to occur more commonly in blacks. It has also been postulated that environmental pollution^{6,7} and certain characteristics of urban life such as overcrowding and poor hygiene that result in an immune imbalance between Th1 and Th2 and activate the different immune effectors, favoring the development of glomerulopathies.⁸

Similarly, there has been an increase in focal segmental sclerosis associated with obesity⁹ and, unfortunately, we know that in Mexico the prevalence of overweight and obesity in children is 26% in children aged 5 to 11 years of age.¹⁰ However, in children, renal biopsies are not routinely performed. This may skew the information because kidney tissue usually occurs when patients do not respond to steroids or the patient's age is unusual for the syndrome such as in the study that appears in this issue of BMHIM.³

The report in this issue by Fernandez-Canton et al. on mortality due to kidney disease in children <15 years of age during the period from 1998 to 2009 highlights the fact that 42% of deaths were due to acute kidney failure.¹¹ It is known that development of acute renal failure is a poor prognosis in intensive care patients.

An epidemiological shift has taken place: in 1980 the leading cause of acute renal failure and mortality in children <5 years of age was acute diarrhea but due to oral rehydration programs and public health information, there has been success in changing the frequency of this problem in Mexico.^{12,13} Currently, most cases of acute renal failure occur mainly in intensive care units where patients have a high incidence of comorbidity from sepsis,

Hospital Infantil de México Federico Gómez, México D.F., México

Correspondence: Dra. Mara Medeiros Domingo
Hospital Infantil de México Federico Gómez
México D.F., México
E-mail: medeiro.mara@gmail.com

Received for publication: 7-18-11
Accepted for publication: 7-19-11

congenital cardiovascular malformations or malignancies (leukemias, lymphomas) and are often accompanied by a systemic inflammatory response and multiple organ failure. Indeed, a history of acute renal injury predisposes to the development of chronic kidney disease.^{14,15}

It is notable that 35% of the deaths due to chronic kidney disease were more frequent in the group of 10- to 14-year-olds. In Mexico we have a single registry of kidney diseases so that the true prevalence of chronic kidney disease is unknown, although it is estimated that one in nine adults has kidney disease (there are ~60,000 patients on dialysis).^{16,17}

Considering that the proportion of children with chronic kidney disease in developed countries is ~20-25%, it can be deduced that in Mexico there are from 3,000 to 6,000 children with this problem.

A study was recently conducted following the protocol of the National Kidney Foundation for detecting kidney disease in high-risk individuals (diabetes, hypertension or family history of diabetes, hypertension or chronic kidney disease) and prevalence of chronic kidney disease was 22% in adults residing in the Federal District (DF) and 33% in adults in the state of Jalisco.¹⁸ Following this methodology, the global prevalence is 11-33% depending on the country.¹⁹

Recent advances in the last decades have been introduced to care for patients with kidney disease. Some of these advances are the development of new dialysis systems (twin bags, systems of disconnection, automated dialysis). Most importantly, there exists the option of renal transplantation which, with the current immunosuppressive drugs, shows the achievement of graft survival at 5 years of 90% and graft half-life of 11 years. Therefore, the explanation for the rate of mortality is actually the problem of access to medical care.

In Mexico, treatment of chronic renal disease depends on the patient's access to a social security system (Instituto Mexicano del Seguro Social, Institute of Security and Social Services for State Workers, Social Security Institute of the State of Mexico and Municipalities) that covers the cost of treatment.²⁰ In adults, only 1/4 patients with renal impairment has access to treatment¹⁶ and although exact figures are not available, in children the situation may not be very different.

Strategies should be implemented for early detection of kidney disease in children because early intervention

may prevent or delay the development of chronic renal failure. One proposal would be to perform urinalysis on all school-age children as has been successfully carried out in Japan.²¹ Another proposal would be to focus efforts on the population at risk, which would include premature infants, patients with urinary tract infections who have congenital malformations of any kind, patients who have had acute renal failure or patients with relatives who have kidney failure and, of course, obese children.

Emphasis should be placed on a careful pediatric review that always includes taking blood pressure and suspecting kidney disease when a child is not growing properly. It would also be desirable to have better equity in access to health care.

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