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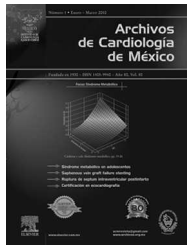

SPECIAL ARTICLE

Diabetic kidney disease: act now or pay later? "World Kidney Day" March 11th 2010

Nefropatía diabética: "actúa ahora o paga después" "Día mundial del riñón" 11 de marzo 2010

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For the 2010 International Society of Nephrology/International Federation of Kidney Foundations World Kidney Day Steering Committee* (RA) and the International Diabetes Federation (PZ).

World Kidney Day 11 March 2010: we must act on diabetic kidney disease

In 2003, the International Society of Nephrology and the International Diabetes Federation launched the booklet "Diabetes in the Kidney: Time to act".[1] The booklet highlighted the type 2 diabetes and diabetic kidney disease global pandemic. It aimed to alert governments and health organizations, as well as providers, physicians, and patients to the increasing health and socioeconomic problems due to diabetic kidney disease and its sequelae: end stage kidney disease requiring dialysis and cardiovascular death. Seven years later, this warning has become even more urgent. World Kidney Day 2010, under the auspices of the International Society of Nephrology (ISN) and the International Federation of Kidney Foundations (IFKF), together with the International Diabetes Federation (IDF), provides yet another chance to underline the importance of diabetic kidney disease, stressing the lack of awareness of the problem at both public and government levels, and emphasizing that its management involves prevention, detection and treatment of its complications. Primary prevention of type 2 diabetes will require massive lifestyle changes in developing and developed countries supported by strong governmental commitment to promote lifestyle and societal change.

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The Global Threat of Type 2 Diabetes

The 21st century has the most diabetogenic environment in human history.[2, 3] Over the past 25 years or so, the prevalence of type 2 diabetes in USA has almost doubled, with three- to five-fold increases in India, Indonesia, China, Korea and Thailand.[4] In 2007, there were 246 million diabetic people in the world, but the number is estimated to reach 380 million people by 2025.[5] People with impaired glucose tolerance, a "prediabetic state", numbered 308 million in 2007 and they will be 418 million by 2025.[5] The increasing prevalence of diabetes will be worse in developing countries. In Mexico, for example, 18% of its adult population will have with type 2 diabetes by 2025. According to WHO, in China and India there will be about 130 million diabetics by 2025; these countries will spend about 40% of their national healthcare budget; also, they will suffer reduced productivity and trouble to achieve economic growth.

The United Nations General Assembly, on December 21st 2006, addressed this situation and, unanimously, passed Resolution 61/225 declaring diabetes an international public health issue and setting World Diabetes Day as a United Nations Day, so this is the second disease, only after HIV/AIDS, to attain that status. For the first time, governments have acknowledged that a non-infectious disease poses as serious a threat to world health as infectious diseases like HIV/AIDS, tuberculosis and malaria. Now, diabetes is considered as a major global public health concern, especially in developing countries with fewer resources to afford it. The first step to act on diabetic kidney disease must involve public health campaigns aimed to prevent the development of type 2 diabetes.

Diabetic Kidney Disease

Diabetes is now the major world cause of end stage kidney failure, both in developing and developed nations.[6] It is the primary diagnosis causing kidney disease in 20-40% of patients starting treatment for end stage renal disease worldwide.[7] In Australia, new type 2 diabetes patients starting dialysis increased 5-fold from 1993 to 2007.[8] Between 1983 and 2005, there was a 7-fold increase in new diabetic patients starting renal replacement therapy in Japan, accounting for 40% of all new cases.[9] Thus, approximately 30% of the predicted 1.1 trillion dollar medical costs of dialysis world-wide during this decade will result from diabetic nephropathy.[10]

The United Kingdom Prospective Diabetes Study (UKPDS) reported progression rates of 2-3% per year for newly diagnosed type 2 diabetes in the stages of normoalbuminuria, microalbuminuria, macroalbuminuria and renal failure.[11] Over a median of 15 years of follow-up of 4000 participants, almost 40% developed microalbuminuria.[12] In the DEMAND study with 32 208 patients from 33 countries having known type 2 diabetes attending their family doctor, 39% had microalbuminuria and prevalence increased with age, duration of diabetes and presence of hypertension.[13] About 30% of the UKPDS cohort developed renal impairment, and almost 50% of them did not have preceding albuminuria.[12] Reduced glomerular filtration rate and albuminuria caused by diabetic nephropathy are independent risk factors for cardiovascular events and death.[14] Therefore, detection of early diabetic kidney disease by screening for albuminuria and reduced glomerular filtration rate is the second step in acting on diabetic kidney disease.

An added difficulty to overcome is the remarkable lack of awareness among patients about their condition. Population-based surveys have found that for every known diabetic patient, there is at least one more not diagnosed,[15] and only 8.7% in the general population were able to identify diabetes as a risk factor for kidney disease.[16] Very few patients with diabetic kidney disease are aware of their condition, with some community surveys revealing a patient awareness of the disease as low as 9.4%, particularly in those with milder impairment.[17] Thus, public educa tion is the third step required for acting on diabetic kidney disease in the community. An IFKF world-wide long-term goal is to have all kidney patients not only aware of their disease, but actively knowing, for example, their blood pressure and the treatment objectives.

Management of Diabetic Kidney Disease

There is little use in screening populations or "at risk" groups, unless follow-up is established and effective treatment is begun and assessed.[18] Fortunately, there is evidence that early therapeutic intervention in patients with chronic kidney disease or diabetes can delay onset of complications and improve outcomes. For example, UKPDS,[19,20] STENO-2,[21] and ADVANCE studies[22-24] have all demonstrated that a tight control of blood glucose levels, blood pressure (and lipids in STENO-2) significantly reduced incidence and progression of diabetic kidney disease. In patients with type 2 diabetes, inhibition of the renin-angiotensin-aldosterone system using an ACE (angiotensin-converting enzyme) inhibitor or an ARB (angiotensin II receptor blocker) decreased the progression from normoalbuminuria to microalbuminuria,[25] reduced the progression from micro albuminuria to macroalbuminuria,[26] and slowed the development of ESRD (End-stage Renal Disease).[27] Thus the use of an ACE inhibitor or ARB is now the standard therapy for patients with diabetic nephropathy as well as glucose, lipid and blood pressure control. Effective management using evidence-based therapies is the fourth step in tackling diabetic kidney disease.

The fifth step is the development of new therapies. Many new agents are now in clinical trials on reducing renal damage and fibrosis, including blockade of formation of advanced glycation end products and other signaling pathways. Other novel agents may potentially show to be effective in large randomized double-blind clinical trials.[28]

How can we Act Now?

The steps to be taken are clear: campaigns aimed at (1) prevention of type 2 diabetes; (2) screening for early diabetic kidney disease; (3) increasing patient awareness of kidney disease; (4) using effective medication strategies and, finally, (5) researching and trialing new therapies. The ultimate challenge is to get everybody action, from primary health providers to higher levels physicians,

from the diabetic patients to those at risk, in various health care areas, in all countries, despite of different economic status and priorities. The problem is a global one and yet requires local actions, preventive screening and treatment strategies, education -including increasing awareness both in diabetic patients and those at risk of developing diabetes- as well as health priorities and authorities. Basic research and clinical trials searching for a new understanding of this disease and therapies must be supported.

United Nations, as noted earlier, accepted the importance of diabetes in 2006 establishing a World Diabetes Day. Both the ISN and the International Diabetes Federation are working in close cooperation with WHO to provide increasing understanding of the challenge that diabetic kidney disease represents to world health and health care budgets. However, World Kidney Day also provides a focus for other international agencies, government ministries of health, non-government organizations, private foundations and academic institutions to come together with national kidney foundations to be involved in the effort to prevent and manage diabetic kidney disease.

The ISN, through its COMGAN Research and Prevention Committee, has developed a web program, the KHDC (for detection and management of chronic kidney disease, hypertension, diabetes and cardiovascular disease in developing countries [http://www.nature.com/isn/education/guidelines/isn/pdf/ed_051027_2x1.pdf]) as a global basic schedule involving a detection, management and data assessment program which has already screened approximately 42 000 people in 25 developing countries; the data are stored and analyzed in the Kidney Disease Data Center at the Headquarters Committee of the Mario Negri Institute, in Bergamo, Italy. This program can be tailored to any individual country's needs and resources. The IFKF also has developed a program, first created by the National Kidney Foundation, in USA; this is the Kidney Early Evaluation Program (KEEP), a screening program for detection of people at high risk of kidney disease. At present, KEEP has been implemented in many countries and, also, it's intended to screen and manage patients with diabetic kidney disease.

The World Kidney Day 2010 focuses on diabetic kidney disease to increase awareness on the magnitude of the problem and provides alternatives for global health care of people with diabetes and kidney disease. Therefore, it's time to act, to act urgently. It is time to develop strategies for prevention of diabetes and its sequelae. It is time to create programs that help health care workers to diagnose and manage people with diabetic kidney disease. It is time for governments to pass legislation enabling the diabetes pandemic to be controlled. After all, diabetic kidney disease, like epidemics of infectious diseases that have long dominated public health agendas agencies programs, is potentially preventable. Indeed, March 11, 2010 is a time to start actions against diabetic kidney disease, actions to be sustained for a long time after the World Kidney Day.

ISN/IFKF 2010 World Kidney Day Steering Committee: William G Couser, MD, Miguel Riella MD, Co-chairpersons. Georgi Abraham MD, Paul Beerkens, John Feehally MD, Guillermo Garcia-Garcia MD, Dan Larson, Philip KT Li MD, Bernardo Rodriguez-Iturbe, MD

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