Prevalence and correlates of diabetic nephropathy in patients with youth onset diabetes in India

P A Praveen¹, A Amutha², K Singh³, U Shankar¹, T Kaur⁴,
RS Dhaliwal⁴, A K Das⁵, C S Yajnik⁶, V Mohan², Nikhil Tandon¹

¹All India Institute of Medical Sciences, New Delhi, India, ²Madras Diabetes Research Foundation, Chennai, India, ³Public Health Foundation of India, New Delhi, India, ⁴Indian Council of Medical Research, New Delhi, India, ⁵Pondicherry Institute of Medical Sciences, Puducherry, India, ⁶King Edward Memorial Hospital and Research Centre, Pune, India

Background

With the rising prevalence of diabetes in youth, an increase in diabetes-related complications, such as nephropathy, is anticipated. However, data on the epidemiology of diabetic nephropathy in youth onset diabetes are limited.

Objectives

- ❖ To compare the prevalence of diabetic nephropathy among patients with young onset Type 1 (T1DM) and Type 2 diabetes (T2DM).
- ❖ To identify the risk factors of diabetic nephropathy among youth onset T1DM and T2DM patients.

Methods

- ❖ The study population was selected from a multi city, multi-centric clinic based registry of youth onset diabetes-YDR in India. Data from each clinic (reporting centre) were collated by the designated collaborating centre in that city.
- ❖ Data of all patients with youth onset (age at diagnosis ≤ 25 years) T1DM (n=2167) and T2DM (n=857), registered (from 2000 to 2012) at the Delhi (North India) and Chennai (South India) collaborating centres of the above registry were analysed.
- ❖ Diabetes was classified using symptom-based clinical criteria.
- ❖ Patients were labeled to have diabetic nephropathy if 24 hour urine protein excretion was greater than 500mg or urine albumin excretion greater than 300mg.

Results

- ❖ Prevalence (95% C.I) of diabetic nephropathy was higher among patients with type 2 diabetes [6.4%(4.8, 8.1)] compared to type 1 diabetes [3.0% (2.3, 3.8)].
- ❖ The mean duration of diabetes since diagnosis (95% C.I) was significantly higher among those with nephropathy [Type 1 diabetes- 11.0 (8.7, 13.2); Type 2 diabetes-12.3 (9.4, 15.3)] compared to those without nephropathy [Type 1 diabetes- 3.0 (2.7, 3.2); Type 2 diabetes- 5.7 (5.1, 6.2)].
- ❖ In multivariable logistic regression analysis, factors such as duration of diabetes and blood pressure were independently positively associated with diabetic nephropathy in both type 1 and type 2 diabetes (Tables 1 & 2).
- ❖ However, factors such as obesity and HbA1c did not show any association with the presence of diabetic nephropathy.
- ❖ The prevalence of diabetic retinopathy increased with age (Figure-1). However, there was no gender difference in the prevalence of diabetic nephropathy in both type 1 and type 2 diabetes

Figure-1: Age specific prevalence of diabetic nephropathy

Table -1: Risk factors of diabetic nephropathy among T1DM

Factors	Adjusted odds ratio (95% CI)	P value
Age at diagnosis		
<10 y	Ref	
10-19 y	1.02 (0.50, 2.07)	0.96
20-25 y	2.13 (0.90, 5.04)	0.09
Duration of diabetes since diagnosis		
<5 y	Ref	
5-9 y	2.20 (0.83, 5.79)	0.116
≥10 y	8.39 (4.10, 17.20)	<0.0001
Body Mass Index		
Normal	Ref	
Underweight	0.58 (0.21, 1.64)	0.30
Overweight/obese	1.07 (0.50, 2.28)	0.85
Raised blood pressure		
No	Ref	
Yes	6.94 (3.61, 13.32)	<0.0001

Table -2: Risk factors of diabetic nephropathy among T2DM

Factors	Adjusted odds ratio (95% CI)	P value
Age at diagnosis		
<20 y	Ref	
20-25 y	0.71 (0.39, 1.29)	0.26
Duration of diabetes since diagnosis		
<5 y	Ref	
5-9 y	0.87 (0.28, 1.64)	0.81
≥10 y	3.83 (2.10, 7.12)	<0.0001
Body Mass Index		
Normal	Ref	
Underweight	2.53 (0.48, 13.14)	0.27
Overweight/obese	0.98 (0.53, 1.79)	0.94
Raised blood pressure		
No	Ref	
Yes	2.07 (1.15, 3.71)	0.01

Conclusions

- ❖ Despite short duration of disease, there was a considerable burden of diabetic nephropathy among patients with youth onset diabetes in India, regardless of the diabetes type.
- ❖ This warrants early screening for diabetes complication in patients with youth onset diabetes.

➤ The YDR registry was funded by the Indian Council of Medical Research, (ICMR) New Delhi, India
➤ PA Praveen received travel grant from the ICMR to attend the World Diabetes Congress-2017