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Interval from Urinary Abnormalities in Health Checkups to the Diagnosis of IgA Nephropathy: A Descriptive Study Using Health Insurance Claims Data in Japan

Keiichi Matsuzaki[1], Hitomi Kurihara[2], Rikiya Toda[2], Yoshiyuki Shibasaki[2]
1 Department of Public Health, Kitasato University School of Medicine, Kanagawa, Japan
2 Medical Affairs, Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Introduction

IgA nephropathy (IgAN) is the most common primary glomerulonephritis and has a poor prognosis without treatment. Early diagnosis is crucial because early therapeutic intervention leads to better prognosis[1)]. In Japan, the annual health checkup system is well established; hence, IgAN is often detected following urinary abnormalities such as hematuria and proteinuria in health checkups[2)]. However, clinical diagnostic processes after the detection of urinary abnormalities in health checkups vary widely, and there is no clear evidence regarding the interval from the detection to the diagnosis. It is thought that treatment initiation remains delayed in many patients, which may contribute to decline in kidney function.
Therefore, this study aims to clarify the interval from the detection of urinary abnormalities in health checkups to the diagnosis of IgAN in Japan.

Conclusion

This study described the interval from the detection of urinary abnormalities in health checkups to the diagnosis of IgAN in Japan.
Of note, in 29.1% of patients, urinary abnormalities were detected ≥36 months prior to the kidney biopsy, suggesting that there remains potential for earlier diagnosis of IgAN.

Results (patient information)

Flow diagram

Diagnosed with IgAN (ICD-10 code: N028)
N=31,766

↓

Diagnosed with IgAN (ICD-10 code: N028) within one year after a kidney biopsy
N=5,998

↓

Aged 18–74 years at the index date
N=5,339

↓

At least one available health checkup result for each of hematuria, proteinuria, and eGFR
N=1,046 (Full analysis set)

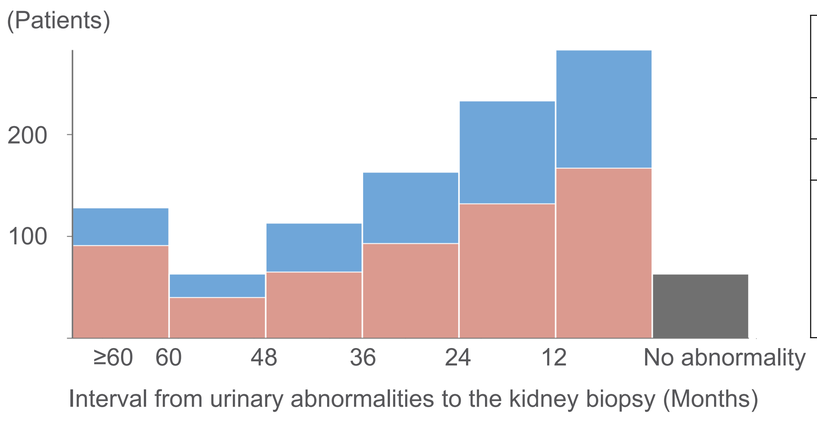
Patient background

N=1,046	
Age, Median (Q1–Q3), years	45.0 (37.0–52.0)
Sex (Male), N (%)	615 (58.8%)
BMI, Median (Q1–Q3), kg/m^2	23.0 (20.7–25.8)
Systolic blood pressure, Median (Q1–Q3), mmHg	122.0 (113.0–134.0)
Diastolic blood pressure, Median (Q1–Q3), mmHg	78.0 (70.0–86.0)
eGFR, Median (Q1–Q3), mL/min/1.73m^2	64.7 (52.0–78.0)
Hematuria positive, N (%)	816 (78.0%)
Proteinuria positive, N (%)	785 (75.0%)
Hematuria × Proteinuria Both positive, N (%) Either or both positive, N (%)	N = 957* 607 (63.4%) 868 (90.7%)
History of diabetes mellitus, N (%)	302 (28.9%)
History of hypertension, N (%)	533 (51.0%)
History of chronic tonsillitis, N (%)	17 (1.6%)

*Hematuria and proteinuria were measured within 3 months

Results (Primary outcome)

Interval from urinary abnormalities in health checkups to the kidney biopsy



	Full analysis set	Subgroup analysis		
		Initially positive	Negative to positive	No abnormality
N	1,046	588 (56.2%)	395 (37.8%)	63 (6.0%)
Median (Q1–Q3), months	19.92 (7.27–40.83)	23.35 (10.37–45.33)	20.47 (10.13–38.93)	NA
Patients with abnormalities observed at least				
36 months prior to the kidney biopsy	304 (29.1%)	196 (33.3%)	108 (27.3%)	0 (0.0%)
24 months prior to the kidney biopsy	467 (44.6%)	289 (49.1%)	178 (45.1%)	0 (0.0%)
12 months prior to the kidney biopsy	700 (66.9%)	421 (71.6%)	279 (70.6%)	0 (0.0%)

In 29.1% of patients, urinary abnormalities were detected ≥36 months prior to the kidney biopsy.

Stratified by initially detected urinary abnormality

	Initially detected urinary abnormality		
	Hematuria	Proteinuria	Hematuria and proteinuria
N	280 (28.5%)	266 (27.1%)	437 (44.5%)
Median (Q1–Q3), months	25.35 (15.22–42.02)	34.55 (17.07–54.27)	15.07 (5.60–28.50)
Patients with abnormalities observed at least			
36 months prior to the kidney biopsy	92 (32.9%)	130 (48.9%)	82 (18.8%)
24 months prior to the kidney biopsy	149 (53.2%)	171 (64.3%)	147 (33.6%)
12 months prior to the kidney biopsy	226 (80.7%)	226 (85.0%)	248 (56.8%)

Omit patients with no abnormalities (n=63)

Both hematuria and proteinuria detected initially group has the shortest median interval (15.07 months), whereas proteinuria first group has the longest (34.55 months) when stratified by phenotypes of initially detected urinary abnormality.

Stratified by eGFR at the most recent health checkup prior to the kidney biopsy

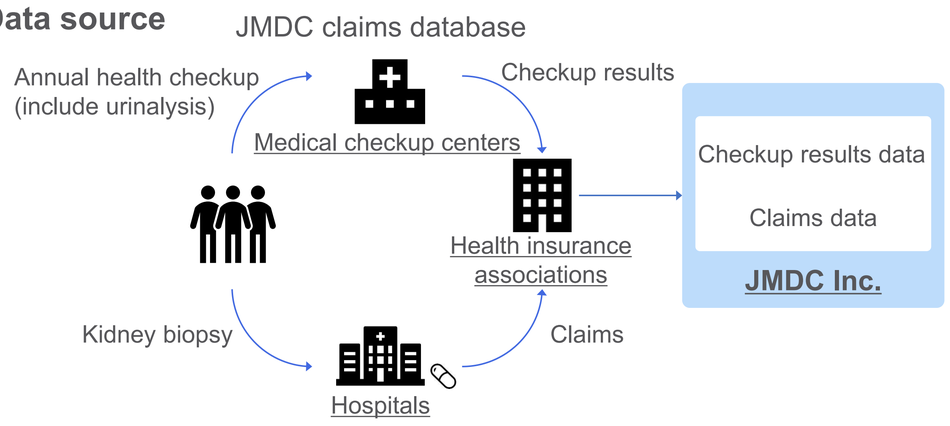
	eGFR		
	≥60	30–<60	<30
N	550 (58.0%)	358 (37.8%)	40 (4.2%)
Median (Q1–Q3), months	16.07 (6.30–33.60)	25.88 (11.97–46.67)	19.12 (8.73–45.70)
Patients with abnormalities observed at least			
36 months prior to the kidney biopsy	128 (23.3%)	137 (38.3%)	12 (30.0%)
24 months prior to the kidney biopsy	209 (38.0%)	193 (53.9%)	16 (40.0%)
12 months prior to the kidney biopsy	327 (59.5%)	268 (74.9%)	28 (70.0%)

Omit patients without eGFR data within 12 months prior to the kidney biopsy (n=98)

No clear trend was observed between eGFR and the primary outcome (16.07–25.88 months) when stratified by eGFR at the most recent health checkup prior to the kidney biopsy.

Methods

Data source



Data period

January 2005 – December 2024

Primary Outcome

- Interval from urinary abnormalities in health checkups to the kidney biopsy
- Stratified by initially detected urinary abnormality and eGFR prior to the kidney biopsy

Population

- Patients diagnosed with IgAN (ICD-10 code: N028)
- Patients who underwent kidney biopsy during the data period
- Patients diagnosed with IgAN within one year after the kidney biopsy (This biopsy date is defined as the index date)
- Aged 18–74 years at the index date
- Patients with at least one health checkup result for each of the following: hematuria, proteinuria, and eGFR

Timing of patient background data collection

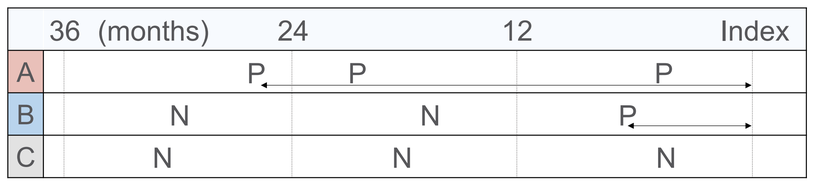
- At the index date: age, sex
- At the most recent health checkup prior to the index date: BMI, blood pressure, eGFR, hematuria, proteinuria
- Prior to the index date: medical history

Definition of urinary abnormalities in health checkups

- Negative (N) is defined as “–” or “±” in both hematuria and proteinuria
- Positive (P) is defined as “+”, “2+”, or “3+” in either hematuria or proteinuria

Definition: interval from urinary abnormalities in health checkups to the kidney biopsy (diagnosis)

Example



26 months (Initially positive)
7 months (Negative to positive)
0 months (No abnormality)

Limitations

- Insurance subscribers in JMDC differ from the actual Japanese population, and individuals cannot be longitudinally tracked if they switch insurance associations.
- The database does not contain laboratory test results other than those from health checkups; therefore, analyses using urinalysis results from medical institutions were not feasible, and values from the most recent health checkup prior to the index date were used instead.
- The disease names in claims data are recorded for insurance billing purposes; therefore there is a possibility they do not correspond to actual clinical diagnoses.

References

1) Kidney Disease: Improving Global Outcomes (KDIGO) IgAN and IgAV Work Group. KDIGO 2025 Clinical Practice Guideline for the Management of IgA Nephropathy (IgAN) and IgA Vasculitis (IgAV). *Kidney Int.* 2025;108(4S):S1–S71.
2) Suzuki Y, et al. *Kidney360.* 2021;2(8):1339–1348.

COI

K. Matsuzaki,
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