

Prognosis, Dialysis and Transplantation in Patients with Immunoglobulin A Nephropathy: Evidence from Real-World Data

Dario Roccatello¹, Michel Kroes², Serge Smeets², Aneesh Thomas George³, Luis Prieto², Jonathan de Courcy⁴, Jade Garratt-Wheeldon⁴, Li Yao⁵

¹University of Turin, Turin, Italy; ²Novartis Pharma AG, Basel, Switzerland; ³Novartis Healthcare Private Limited, Hyderabad, India; ⁴Adelphi Real World, Bollington, England, United Kingdom; ⁵The First Hospital of China Medical University, Shenyang, PR China



Introduction

- Immunoglobulin A nephropathy (IgAN) is the most common form of primary glomerulonephritis worldwide, with an estimated annual incidence of 25 per million¹.
- IgAN patients present with numerous clinical manifestations, commonly including proteinuria, hematuria, and hypertension².
- These clinical manifestations are associated with poor prognosis and can lead to a need for dialysis and kidney transplantation with the progression of disease.
- Approximately 50% of IgAN patients with proteinuria ≥1 g/day progress to kidney failure in 15 years³, which subsequently need to undergo dialysis and kidney transplantation.
- Limited data are available on the proportion of patients progressing from early to later stages of kidney disease.
- Data are also limited on the proportion of patients who will be requiring dialysis and kidney transplantation in the future and the time at which it will be required. To address these data gaps, we conducted this study using a real-world patient sample.
- This analysis aimed to describe prognosis, the need for dialysis, and kidney transplantation in patients with IgAN.

Methods

- The Adelphi IgAN Disease Specific Programme (DSP) was a non-interventional, retrospective, point-in-time survey of IgAN-treating nephrologists conducted in the United States (US), EU5 (France, Germany, Italy, Spain and the United Kingdom) and Asia (China and Japan) between June and October 2021.
- The DSP methodology has previously been published in detail⁴.
- Ethics exemption was obtained from the Pearl Institutional Review Board and Hospital Clinic de Barcelona.
- Nephrologists completed structured online records for successive patients presenting with IgAN in their practice, including patient's demographics, clinical characteristics and details on dialysis and kidney transplantation.
- In this analysis, patients were graded based on physician perceived severity at diagnosis into "mild", "moderate" and "severe". This analysis also presents data as per geographical regions.

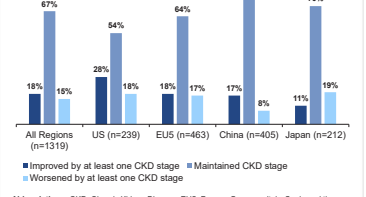
Results

- A total of 295 nephrologists completed records for 1727 patients (US: 296, EU5: 585, China: 580, Japan: 266). The mean patient age was 43.2 years and 59% were men (Table 1, Table 2).

Prognosis

- The kidney function worsened in 15% (of 1319) of patients by at least one CKD stage at the time of survey vs diagnosis, over a median of 95 weeks (Figure 1).
- Japan had the highest proportion of patients (19% of 212) with worsened kidney function by at least one CKD stage followed by US (18% of 239), EU5 (17% of 463) and China (8% of 405).
- Out of 1319 patients, 18% of patients had improved kidney function by at least one CKD stage and 67% maintained the same CKD stage (Figure 1).

Figure 1. Proportion of patients with differences in chronic kidney disease (CKD) stage from diagnosis to time of survey (improved, maintained, worsened)



Abbreviations: CKD: Chronic Kidney Disease; EU5: France, Germany, Italy, Spain and the United Kingdom; US: United States

Conclusions

- This study shows that kidney function in 15% of patients had worsened by at least one CKD stage and less than a fifth of the sample actually improved, despite most receiving treatment from the time of diagnosis to the time of survey potentially indicating the unmet need for IgAN patients.
- More than half of the patients were expected to progress to kidney failure during their lifetime with 13% within three years.
- Although few patients were on dialysis or had received a transplant at the time of the survey, approximately half of the patients were expected to need dialysis in their lifetime.
- 18% of patients were deemed eligible for kidney transplantation, of which nearly one fourth of patients were on a waiting list to undergo transplantation as per nephrologists.
- There was a clear disparity in the proportion of patients deemed eligible to undergo kidney transplantation between US/EU5 and China/Japan. This may be because of differences in availability or feasibility of transplants/transplantation.
- There is an urgent need for patients and nephrologists to seek early diagnosis and subsequent treatment to slow progression and prevent or delay dialysis and transplantation. In addition, higher awareness of severity of kidney diseases is required to receive early treatment and to maintain quality of life for longer.

Results

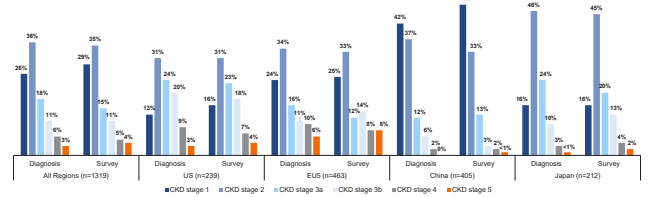
Table 1. Prognosis, dialysis and transplantation in IgAN patients, per severity as perceived by physician at diagnosis

	All Regions		Mild		Moderate		Severe	
	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)
Patient age (years)	1727	43.2 (14.91)	604	39.9 (13.95)	837	44.5 (14.84)	286	46.6 (15.75)
	N	n (%)	N	n (%)	N	n (%)	N	n (%)
Male patients	1727	1016 (59%)	604	326 (54%)	837	507 (61%)	286	183 (64%)
Progression	Question to nephrologist: Based on condition at time of survey, when will patients progress to kidney failure?							
Within next 12 months	1503	41 (3%)	562	2 (<1%)	709	16 (2%)	232	23 (10%)
>12 months - 3 years	1503	151 (10%)	562	21 (4%)	709	70 (10%)	232	60 (26%)
>3 years	1503	568 (38%)	562	146 (26%)	709	311 (44%)	232	111 (48%)
I don't think they will progress to kidney failure	1503	743 (49%)	562	393 (70%)	709	312 (44%)	232	38 (16%)
Dialysis	Question to nephrologist: As per current condition, when will the patient require chronic dialysis?							
Currently receiving dialysis	1727	67 (4%)	604	4 (1%)	837	24 (3%)	286	39 (14%)
Within next <12 months	1517	33 (2%)	569	2 (<1%)	721	15 (2%)	227	16 (7%)
12 months - 3 years	1517	154 (10%)	569	23 (4%)	721	66 (9%)	227	65 (29%)
>3 years	1517	510 (34%)	569	134 (24%)	721	276 (38%)	227	100 (44%)
I don't think they will require dialysis	1517	820 (54%)	569	410 (72%)	721	364 (50%)	227	46 (20%)
Kidney transplantation (KT)	Question to nephrologist: As per current condition, when will the patient require kidney transplantation?							
Undergone a KT	1727	21 (1%)	604	1 (<1%)	837	9 (1%)	286	11 (4%)
Eligible for a KT as per current condition	1706	303 (18%)	603	58 (10%)	828	142 (17%)	275	103 (37%)
Currently on waiting list for a KT	303	72 (24%)	58	9 (16%)	142	24 (17%)	103	39 (38%)

Table 2. Prognosis, dialysis and transplantation in IgAN patients of various geographies

	All Regions		US		EU5		China		Japan	
	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)
Patient age (years)	1727	43.2 (14.91)	296	44.2 (14.56)	585	44.9 (15.10)	580	39.7 (13.72)	266	46.3 (15.93)
	N	n (%)	N	n (%)	N	n (%)	N	n (%)	N	n (%)
Male patients	1727	1016 (59%)	296	163 (55%)	585	393 (67%)	580	326 (56%)	266	134 (50%)
Progression	Question to nephrologist: Based on condition at time of survey, when will patients progress to kidney failure?									
Within next 12 months	1503	41 (3%)	265	16 (6%)	453	22 (5%)	536	2 (<1%)	249	1 (<1%)
>12 months - 3 years	1503	151 (10%)	265	38 (14%)	453	58 (13%)	536	42 (8%)	249	13 (5%)
>3 years	1503	568 (38%)	265	90 (34%)	453	139 (31%)	536	225 (42%)	249	103 (41%)
I don't think they will progress to kidney failure	1503	743 (49%)	265	121 (46%)	453	234 (52%)	536	256 (48%)	249	132 (53%)
Dialysis	Question to nephrologist: As per current condition, when will the patient require chronic dialysis?									
Currently receiving dialysis	1727	67 (4%)	296	16 (5%)	585	28 (5%)	580	16 (3%)	266	7 (3%)
Within next <12 months	1517	33 (2%)	264	14 (5%)	479	16 (3%)	527	2 (<1%)	247	1 (<1%)
12 months - 3 years	1517	154 (10%)	264	40 (15%)	479	64 (13%)	527	35 (7%)	247	15 (6%)
>3 years	1517	510 (34%)	264	80 (30%)	479	116 (24%)	527	225 (43%)	247	89 (36%)
I don't think they will require dialysis	1517	820 (54%)	264	130 (49%)	479	283 (59%)	527	265 (50%)	247	142 (57%)
Kidney transplantation (KT)	Question to nephrologist: As per current condition, when will the patient require kidney transplantation?									
Undergone a KT	1727	21 (1%)	296	5 (2%)	585	13 (2%)	580	2 (<1%)	266	1 (<1%)
Eligible for a KT as per current condition	1706	303 (18%)	291	86 (30%)	572	184 (32%)	578	14 (2%)	265	19 (7%)
Currently on waiting list for a KT	303	72 (24%)	86	25 (29%)	184	43 (23%)	14	3 (21%)	19	1 (5%)

Figure 2. Proportion of patients present in various chronic kidney disease (CKD) stages at different time points in various geographies



Abbreviations: CKD: Chronic Kidney Disease; EU5: France, Germany, Italy, Spain and the United Kingdom; US: United States

Results

- The deterioration of kidney function over a median of 95 weeks was not consistent across the geographies from diagnosis to point of survey (Figure 2).
- The proportion of patients in chronic kidney disease (CKD) stage 3b remained 11% (of 1319 patients) at the time of diagnosis and survey. However, an increase in the proportion of patients with CKD stage 3b was observed in EU5 (11% to 14%) and Japan (10% to 13%).
- The proportion of patients in stage 4 decreased from 6% to 5% (of 1319 patients) from the time of diagnosis to the time of survey. However, a slight increase was reported in Japan (3% to 4%).
- The proportion of patients in CKD stage 5 (kidney failure) increased from 3% at diagnosis to 4% at the time of survey (of total 1319 patients). This increase has been observed across all regions (US: 3% to 4%, EU5: 6% to 8%, China: 0% to <1%, Japan: <1% to 2%).
- According to nephrologists, 51% (of 760 of 1503) patients were expected to progress to kidney failure during their lifetime (of which 22% [169/760] had mild disease, 52% [397/760] had moderate disease and 36% [194/760] had severe disease) (Table 1).
- The US had the highest proportion of patients (54% of 265 patients) expected to progress to kidney failure followed by China (~53% of 536 patients), EU5 (~49% of 453 patients) and Japan (~47% of 249 patients) (Table 2).
- Out of 1503, 13% (n=192) were expected to progress within three years, thus requiring dialysis or kidney transplantation (Table 1).

Dialysis

- At the time of survey, only 4% (67 of 1727) of patients were on dialysis, of which 6% (4/67) had mild disease, 36% (24/67) had moderate disease and 58% (39/67) had severe disease as per physician perceived severity at diagnosis (Table 1).
- Approximately half of all patients (46% [697/1517]) were expected to require dialysis at some point in the future (of which 23% [159/697] had mild disease, 51% [357/697] had moderate disease and 26% [181/697] had severe disease) (Table 1).
- As per patient's condition at the time of survey, more than half of IgAN patients in the US (~51% of 264) and China (~51% of 527) were expected to require dialysis during their lifetime (Table 2).

Kidney Transplantation

- Only 1% (21 of 1727) of patients had undergone kidney transplantation at the time of survey, of which 5% (1/21) of the patients had mild disease, 43% (9/21) had moderate disease and 52% (11/21) of the patients had severe disease at diagnosis (Table 1).
- Of the remaining patients, 18% (303 of 1706) were considered eligible for kidney transplantation (of which 19% [58/303] had mild disease, 47% [142/303] had moderate disease and 34% [103/303] had severe disease) (Table 1).
- At the time of survey, around one-third of patients in US (30% of 291) and EU5 region (32% of 572) were eligible to undergo kidney transplantation. Whereas a smaller proportion of Chinese (2% of 578) and Japanese (7% of 265) patients were eligible to undergo a kidney transplantation (Table 2).
- Of the 303 patients deemed eligible for kidney transplantation, nearly one fourth (72 of 303) were on a waiting list. Of which 13% (9/72) had mild disease, 33% (24/72) had moderate disease and 54% (39/72) had severe disease (Table 1).
- More than 20% of patients in US (29%), EU5 (23%) and China (21%) were on a waiting list to undergo kidney transplantation, whereas only 5% of Japanese patients were on a waiting list for a kidney transplantation (Table 2).

Limitations

- Patients included in this study were successive patients presenting with IgAN in the nephrologists' practice; therefore, it is not a truly random sample and may not truly represent the overall population of patients.
- This study enrolled patients for a limited period of time and included patients from few countries belonging to different continents.

Abbreviations

CKD: Chronic Kidney Disease; DSP: Disease Specific Programme; EU5: France, Germany, Italy, Spain and the United Kingdom; IgAN: Immunoglobulin A Nephropathy; KT: Kidney Transplantation; SD: Standard Deviation; US: United States

References

- McGrogan A et al. *Nephrol Dial Transplant*. 2011;26(2):414-430.
- Rajasekaran A et al. *The American journal of the medical sciences*. 2020;361(2):176-194.
- Reich HN et al. *J Am Soc Nephrol*. 2007;18(12):3177-3183.
- Anderson P et al. *Current Medical Research and Opinion*. 2008;24(11):3063-3072.

Disclosures

- Data collection for the DSP was undertaken by Adelphi Real World as part of an independent survey and data is owned by Adelphi. Novartis is one of multiple subscribers to the DSP and supported this analysis.
- Dario Roccatello has received financial support for research programs from Novartis, Alexion, GSK, Sandoz, Pfizer and Roche.
- Michel Kroes is a shareholder of Novartis.
- Li Yao has received financial support for research programs from Novartis.

Acknowledgments

The authors acknowledge Kollu Narotham Reddy (Novartis, Hyderabad) for preparing the poster content and V.S. Hari Prasad (Novartis, Hyderabad) for designing the poster layout. The final responsibility for the content lies with the authors.



Scan QR Code for a copy of this poster