Introduction

- IgA nephropathy is a primary glomerular disease (PGN) characterized by the deposition of the IgA抗体 in the glomerulus. About one-third of patients have been diagnosed with IgA nephropathy worldwide, and the proportion is higher in Asia. [1]
- The clinical presentation of IgA nephropathy is heterogeneous, from simple hematuria to severe glomerulonephritis and renal failure. Without effective treatments, IgA nephropathy can progress to end-stage renal disease (ESRD).[2]
- The pathogenesis of IgA nephropathy remains elusive and specific treatment of IgA nephropathy are unclear.

Objective

To conduct a systematic literature review on epidemiology, burden of disease, quality of life and clinical treatment of IgA nephropathy in China.

Methods

Literature Retrieval

- English electronic databases: Pubmed, Embase
- Date of publication: 2010.01 – 2020.12.10

Inclusion Criteria

- The study included adult patients with IgA nephropathy.
- The study population was Chinese or mainland Chinese. (Mainland China only)
- The literature included at least one outcome indicator on epidemiology, burden of disease, quality of life, and clinical treatment.
- Literature on the burden of disease and quality of life for chronic kidney disease (CKD) and end stage renal disease (ESRD) was also searched.
- Literature are full texts published in Chinese or English.

Exclusion Criteria

- Duplicates publications
- Epidemiological survey of local population with sample size < 200

Results

Literature Review

- A total of 4,030 publications were retrieved (4,000 in Chinese and 63 in English). After duplicate removal, a total of 2,789 publications were screened, and 59 publications were included for detailed retrieval. There were 19 publications on epidemiology, 7 on economic burden, 7 on quality of life, and 27 on clinical treatment.

Epidemiology

- IgA nephropathy is more prevalent among young adults. The mean age of IgA nephropathy patients at diagnosis was 35 ± 11 years old, and patients aged 20-44 years old accounted for 52.7% (31,471/60,000) of all patients.[5]
- There was great gender difference (p < 0.01).
- PGN is the most frequently diagnosed glomerular disease varying from 6.1% to 7.8% (weighted mean 75.0%). In any renal biopsy, IgA nephropathy is the most common PGN, accounting for 34.3% to 52.1% (weighted mean 37.8%). Therefore, the diagnosis rate of IgA nephropathy in patients with renal biopsy was about 24.4% ± 41.0%.[6]
- The overall prevalence of IgA nephropathy in China is shown in Table 1 as illustrated in Figure 1.

Table 1: Epidemiological study of IgA nephropathy in China

<table>
<thead>
<tr>
<th>Study</th>
<th>Year</th>
<th>Population</th>
<th>Prevalence</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>2006</td>
<td>18,900,000</td>
<td>0.13%</td>
<td>[9]</td>
</tr>
<tr>
<td>UK</td>
<td>2010</td>
<td>52,234,000</td>
<td>0.32%</td>
<td>[10]</td>
</tr>
<tr>
<td>USA</td>
<td>2012</td>
<td>305,000,000</td>
<td>0.45%</td>
<td>[11]</td>
</tr>
</tbody>
</table>

References

- Li, B., et al., The prevalence of CKD in adults in China is about 10.8%. The number of adult patients with CKD is estimated to be 111 million.[7]
- Rao, X., et al., Glomerulonephritis (GN) accounted for 14.4% of all ESRD.[8]
- Therefore, there were 17.2 million adults with glomerulonephritis.
- PGN accounts for about 71.5% of GN, thus the number of patients with PGN is 12.14 million.

Figure 1: Literature Retrieval Process

Quality of Life

- The use of SF-36 can evaluate the quality of life of patients with IgA nephropathy showed that the subscale scores were SF-36 PCS scores: SF-36 MCS score: quality of life (QOL).[9]
- About 30% of patients with IgA nephropathy develop depressive symptoms. Using the Beck Depression Inventory (BDI) at a score of 7, 10, 14 for all study patients.[10]
- Patients with IgA nephropathy who progress in ESRD have poor mobility and quality of life due to disease manifestations, malnutrition, anemia, insomnia, and loss of muscle mass due to long-term dialysis.[11]
- Age, education level, marital status, comorbidities, complications, and duration of dialysis all affect patients’ quality of life.[12-13]
- With the increase of dialysis times, the risk of death gradually increased. Retrospective study on the survival outcomes of ESRD in China shows that the annual morality rate of ESRD patients undergoing hemodialysis in China is about 8% - 11%, which is higher than that of the general population (50 - 64 years old: 0.4% - 1.0%), and the primary cause of death is cardiovascular and cerebrovascular events and systemic failure.[14-23]

Clinical Treatment

- The rate of receiving RAAS inhibitors in patients with IgA nephropathy ranged from 9.0% to 96.2%.[24-28]
- Rosuvastatin therapy was used more frequently, according for nearly 88.5%.[29]
- The treatment rate with glucocorticoids (oral methylprednisolone or prednisolone) is about 13.0% - 30.0%.[30-34]
- About 24.5-33.2% of patients were treated with immunosuppressants,[22-24,26-28,31,32,34-36] including methylprednisolone (MP), cyclosporine (Cy), cyclophosphamide (CyC), leflunomide (LEF), and leflunomide (Lef) [22,24-26,30-31].
- Many patients were also treated with traditional Chinese medicine, which is mainly based on TCM therapy. and prednisolone as a first-line treatment.[31,32,35,36]
- For compliance, the utilization rate of RAAS inhibitors for 5 months and above was 89.3% - 90.0%,[22-26,27,30,32-34] the initial dose of glucocorticoids was 3.1-3.4 mg/kg/d, and the dose was typically reduced after 2 months, and the drug was discontinued after 6 to 12 months of use.[28-34,36]
- For efficacy, 60-74.4% of patients with IgA nephropathy can achieve remission after 6 months of therapy.[31,32,34,35] Urine protein remission was achieved in 37.3% of patients using RAAS inhibitors alone (Ta-Pi),[32,34] with patients poor control after treatment with RAAS inhibitors, the combination of RAAS inhibitors with glucocorticoids or immunosuppressants significantly reduced short-term urinary protein levels and delayed renal function progression;[36,7,22-26,27,32,33,34] the rate of the ESRD decline (38.3%) in patients treated for long-term dialysis.[36,21,34,35] The rate of the ESRD decline in combination with glucocorticoids or immunosuppressants in patients with IgA nephropathy is shown in Table 2 as illustrated in Figure 2.

Quality of Life

- For safety, few studies have reported adverse events of RAAS inhibitors, an RCT reported one case of nephropathy and one case of hyperkalemia after RAAS treatment.[31,32,34] The adverse events of glucocorticoids and immunosuppressants are mainly infections, diabetes, abnormal liver functions and Cushing’s syndrome.[36,21-35,37,38]

Conclusion

In China, IgA nephropathy is the most common PGN, with a large number of patients. And because there are currently no medications specifically approved for this condition, as the disease progresses to ESRD, IgA nephropathy takes significant toll on patients’ quality of life and carries heavy economic burden to both patients and society.