



Therapeutic efficacy of steroids in severe infection-related glomerulonephritis

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ABSTRACT

Implication for health policy/practice/research/medical education:

Steroids have a role in managing elderly infection-related glomerulonephritis cases presenting as rapidly progressive glomerulonephritis. Timely administration of steroids after treating infective foci could aid in renal recovery.

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Infection-related glomerulonephritis (IRGN) is characterized by complement pathway activation, glomerular injury, and glomerular immune-complex deposition. The prognosis is poor in elderly patients with co-morbid conditions (1). Steroids might help mitigate glomerular inflammation and aid in renal recovery. Literature on the usage of steroids in IRGN needs to be more extensive.

We describe two cases of rapidly progressive glomerulonephritis (RPGN) secondary to IRGN, in whom timely administration of steroids resulted in renal recovery.

A 75-years-old man known case of diabetes, hypertension, and coronary artery disease with bilateral lower limb eczema presented to our center in August 2022 with oedema and oliguria. Before this admission, he had received oral co-amoxiclav for infected eczema for a week. His serum creatinine (SCr) worsened to 5 mg/dL from his baseline level of 0.9 mg/dL. Urinalysis showed 'active' deposits and nephrotic range proteinuria. Complement C3 was low and C4 was normal. Cultures did not yield bacterial growth, due to the prior antibiotic therapy. After the clinical resolution of the infection, he was started on intravenous pulse methylprednisolone 500 mg for three days, followed by oral prednisolone 0.5 mg/kg/d. Four sessions of hemodialysis were required during his hospital stay. A renal biopsy could not be conducted because of bilateral renal cortical cysts. He had a resolution of symptoms in the second week, and prednisolone was

tapered and stopped in 4 weeks-timeline. After ten months of follow-up, serum creatinine is 1.4 mg/dL.

A 72-year-old diabetic female was admitted in December 2022 for treatment of pneumonia. Her symptoms improved with cefoperazone-sulbactam and azithromycin. During the hospital stay, she developed oedema and serum creatinine worsened to 3.4 mg/dl from her admission serum creatinine level of 0.9 mg/dl. Urinalysis revealed glomerular haematuria and proteinuria. Renal biopsy revealed diffuse endocapillary proliferative glomerulonephritis in the background of diabetic nephropathy. Steroids were administered as in the previous case after the complete resolution of respiratory symptoms. The renal recovery was complete, and at six months follow-up, her serum creatinine is 0.9 mg/dl.

Consensus has not been arrived yet on the administration of steroids in cases of IRGN (2). A retrospective analysis of a few cases suggested that steroids could have a role in managing crescentic IRGN (3). The recently published only randomized controlled trial (RCT) on the efficacy of corticosteroids in IRGN concluded that steroid administration was not associated with renal recovery (4). However, the study findings come with a caveat. It was a single-center study with a small sample size and was terminated earlier because of the COVID-19 pandemic. The study population constituted a relatively younger age group. The 'treatment' arm had more cases with crescents in biopsy when compared to the 'control' arm (57.7% versus 19.2%), which could have negated some benefits

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of steroids. Importantly, the RCT included all cases with serum creatinine > 1.5 mg/dL.

We conclude that steroids have a role in managing elderly IRGN cases presenting as RPGN. Timely administration of steroids after treating infective foci could aid in renal recovery. For such rare glomerular diseases, clinicians should consider real-world evidence in addition to RCT while taking therapeutic decisions.

Authors' contribution

Conceptualization: Varadharajan Jayaprakash.

Data curation: Mathew Gerry George.

Formal analysis: Mathew Gerry George.

Investigation: Mathew Gerry George.

Methodology: Varadharajan Jayaprakash.

Resources: Varadharajan Jayaprakash, Santhanam Jennie.

Supervision: Santhanam Jennie.

Validation: Santhanam Jennie.

Visualization: Santhanam Jennie.

Writing–original draft: Varadharajan Jayaprakash.

Writing–review and editing: Mathew Gerry George, Santhanam Jennie.

Conflicts of interest

The authors declare that they have no competing interests.

Ethical issues

The case report was conducted in compliance with the

World Medical Association Declaration of Helsinki. Written informed consent for publication as a case report was obtained from both patients. The authors have fully adhered to ethical considerations, including plagiarism, data fabrication, and double publication.

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