

Rituximab in Kidney-Limited Microscopic Polyangiitis: A Case Report

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Background: Microscopic polyangiitis (MPA) is an immune complex mediated necrotizing vasculitis. The diagnosis is based on symptoms, including rapidly progressive glomerulonephritis, peripheral nerve disorder, lung abnormalities, and positive MPO-ANCA findings (1). The pathophysiology involves formation of neutrophil extracellular traps in the kidneys, which correlate with ANCA affinity for MPO and disease activity (2). Rituximab has been used in cases where conventional cyclophosphamide therapy may not be suitable (3).

Case Presentation: A 78-year-old white male with a past medical history of gout and type 2 diabetes mellitus, presented with general weakness. Laboratory testing revealed serum creatinine of 5.2 mg/dl (normal <1.3 mg/dl) on presentation. He underwent kidney biopsy which demonstrated crescentic pauci-immune glomerulonephritis. He was treated with two doses of rituximab 1 gram, two weeks apart every 6 months for the past year. Upon presentation, he underwent dialysis for 2 months. After two years of treatment, laboratory evaluations reveal a stable creatinine of 1.77 and MPO antibody titers persistently elevated above 8. The patient responds well to Rituximab treatment, with stable renal function and no signs of extrarenal organ involvement. The plan is to continue treatment for a minimum of five years due to his consistently elevated MPO titer.

Discussion: Rituximab, a monoclonal antibody against CD20, is used as monotherapy for MPA to induce remission or alongside prednisone in severe MPA [4]. Given the patient's age, his remarkably kidney-limited disease, and favorable side effect profile, rituximab infusions were initiated over conventional chronic corticosteroids and cyclophosphamide therapy.

This case report highlights the kidney-limited form of MPA, and aims to underscore the utility of rituximab as a treatment option for kidney-limited MPA. Further research is needed to understand long-term outcomes, optimize management, and establish guidelines for management of similar cases.

References

1. Yoshida, M., Yamada, M., Sudo, Y., Kojima, T., Tomiyasu, T., Yoshikawa, N., Oda, T., Yamada, M. *Myeloperoxidase anti-neutrophil cytoplasmic antibody affinity is associated with the formation of neutrophil extracellular traps in the kidney and vasculitis activity in myeloperoxidase anti-neutrophil cytoplasmic antibody-associated microscopic polyangiitis*. *Nephrology*, 2016. **21**(6): pp. 624-629. doi:10.1111/nep.12736
2. Tamei, N., Sugiura, H., Takei, T., Itabashi, M., Uchida, K., Nitta, K. *Ruptured arterial aneurysm of the kidney in a patient with microscopic polyangiitis*. *Intern Med*, 2008. **47**(6): pp. 521-526. doi:10.2169/internalmedicine.47.0624
3. Moiseev, S., Bossuyt, X., Arimura, Y., Blockmans, D., Cxernok, E., Damoiseaux, J., Emmi, G., Flores-Suarez, L.F., Hellmich, B., Jayne, D., Jennette, J.C., Little, M.A., Mohammad, A.J., Moosig, F., Novikov, P., Pagnoux, C., Radice, A., Sada, K.-E., Segelmark, M., Shoenfeld, Y., Sinico, R.A., Specks, U., Terrier, B., Tzioufas, A.G., Vaglio, A., Zhao, M.-H., Tervaert, J.W.C., European Study Group. *International Consensus on ANCA Testing in Eosinophilic Granulomatosis with Polyangiitis*. *Am J Respir Crit Care Med*, 2020. **202**(5): p. 1628SO. doi:10.1164/rccm.202005-1628SO
4. Allena N, Patel J, Nader G, Patel, M., Medvedovsky, B. *A Rare Case of SARS-CoV-2-Induced Microscopic Polyangiitis*. *Cureus*, 2021. **13**(5): p. e15259. doi:10.7759/cureus.15259