

A Good History Can Unlock Puzzle- A Case Report of Ibuprofen Induced Minimal Change Glomerulonephritis

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Abstract

Minimal-change disease (MCD) is uncommon in adults contributing about 10% of nephrotic syndrome cases in adults. Underlying pathology is thought to be due to T-cell or B- cell dysfunction resulting in circulating factors like IL-13 affecting glomerular capillary wall permeability resulting in significant proteinuria. NSAIDs (Nonsteroidal anti-inflammatory drugs) are common cause for secondary MCD but often underdiagnosed with missing information from history. Untreated MCD were associated with a high risk for thromboembolism and mortality. We are presenting a case report of ibuprofen induced minimal change glomerulonephritis in a young patient who took ibuprofen on a regular basis with a history of fracture for pain management without subsequent monitoring and unaware of significant side effects of medication.

Keywords: Ibuprofen; Glomerulonephritis; Minimal-Change Disease (MCD)

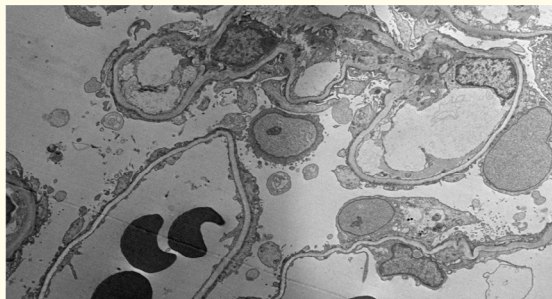
Introduction

Minimal-change disease (MCD) is uncommon in adults contributing about 10% of nephrotic syndrome cases in adults. Underlying pathology is thought to be due to T-cell or B- cell dysfunction resulting in circulating factors like IL-13 affecting glomerular capillary wall permeability resulting in significant proteinuria [1]. NSAIDs (Nonsteroidal anti-inflammatory drugs) are common cause for secondary MCD but often underdiagnosed with missing information from history. Untreated MCD were associated with a high risk for thromboembolism and mortality [2].

Case Report

26-year-old male with history of right ankle fracture 1 year ago and no other significant past medical history presented to the hospital with gradually increasing abdominal distention and increased swelling in bilateral lower extremity since 3 weeks. No history of IV drug abuse, patient reported that he has been taking ibuprofen 600 mg every 6 - 8 hours as needed for months for

pain control from fracture. Vital signs were stable. Physical exam revealed abdominal distention, nontender to palpation, 2+ pitting edema in bilateral lower extremities. Notable lab findings were albumin 0.8 gm/dl, total protein of 3.5 g/dl. Urine analysis showing greater than 500 mg/dl proteinuria. Urine protein creatinine ratio of 2.51. Urine microalbumin creatinine ratio of 1991. Renal ultrasound was normal without any significant hydronephrosis. He was started on IV albumin infusion of 25g every 6 hours. Nephrology was consulted, recommended to have renal biopsy with significant nephrotic range proteinuria. Kidney biopsy results came back consistent with minimal-change disease. After 2 days, his serum albumin level improved to 2.3 g/dl on day 3 with significant improvement in abdominal distention and edema in bilateral lower extremity. Patient was discharged on lisinopril with outpatient follow-up with nephrology. He was started on cyclophosphamide 150 mg daily for 12 weeks, prednisone taper and diuretics after biopsy results with improvement in proteinuria and stable renal function.



Panel A: Showing podocyte foot process effacement suggesting minimal change disease.

Panel B: Pathology slide showing prominent protein resorption droplets.

Panel C: Pathology slide showing unremarkable glomerulus in minimal change disease.

Discussion and Conclusion

NSAIDs can cause nephrotic syndrome due to minimal change disease or membranous nephropathy and acute interstitial nephritis. In our case, patient didn't have any acute tubular necrosis or interstitial nephritis. After ruling out infectious causes, autoimmune work-up has been negative, frequent ibuprofen use for pain control for ankle fracture was thought to be the likely etiology. As underlying etiology can be broad including infectious causes, allergy, drugs, tumors or autoimmune diseases, careful history taking is important in identifying the etiology. Drugs like cyclophosphamide and steroids which can modify cell-mediated immune responses have been shown to have a beneficial effect in treatment of MCD with achieving remission in proteinuria in 70 to 90% of cases [2]. Patients should be carefully monitored for steroid-induced side effects.

Bibliography

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