

CLINICAL VIGNETTE

Minimal Change Disease Relapse: Case Presentation and Discussion

Puja Goswami, MD

Case Report

A 23-year-old male with a past medical history of biopsy proven minimal change disease (7/2009) presented to renal clinic for evaluation of anasarca. In regards to his minimal change disease, he was initially treated with high dose prednisone for 3 months with a six-week taper. This was followed by a relapse that was treated with another steroid course, and a second relapse, which was treated with monthly intravenous cyclophosphamide that resulted in remission for four years. At this visit, he noted a 2 to 3 kg weight gain with foamy urine, abdominal distention and lower extremity edema.

On exam, his vitals included a blood pressure of 101/57 and pulse of 79. He had no evidence of periorbital edema but did have a distended abdomen without a frank fluid wave. Lower extremity pitting edema was noted to the mid-calves bilaterally.

Laboratory studies revealed normal electrolytes, creatinine of 0.7mg/dL, albumin of 2.2g/dL, and TSH of 232.96mIU/L. Urine studies revealed a spot urine protein to creatinine ratio of 5.01. Other tests included negative hepatitis B and C serologies, negative antinuclear antibody screen and negative HIV screen.

The patient was presumed to have a relapse of minimal change disease and started on prednisone therapy. He refused daily high dose prednisone, therefore 60mg every other day was instituted along with synthroid 100mcg daily. One month afterwards his spot urine protein to creatinine ratio decreased to 0.22 with resolution of anasarca and TSH down to 5.23mIU/L. Due to his insistence, prednisone taper was initiated after 2 months of therapy with prednisone 60mg every other day.

Two weeks after beginning prednisone taper, the patient noted recurrence of symptoms, mainly foamy urine and lower extremity edema. At this time a repeat spot urine protein to creatinine ratio was noted to be 9.61, and the patient was started on oral cyclophosphamide uptitrated to 100mg daily with close monitoring of labs. His spot urine protein to

creatinine ratio subsequently decreased to 0.06 after 2 months of therapy.

Discussion

Minimal change disease is predominately found in children, however it does account for 10 to 15% of cases of primary nephrotic syndrome in adults¹. It is a disease process characterized by diffuse loss of visceral epithelial cells foot processes, vacuolation and growth of microvilli on visceral epithelial cells. It has been hypothesized that an abnormal T cell response may be the underlying mechanism in its pathogenesis². Urine loss of thyroid hormone bound to albumin and/or thyroxine binding globulin results in changes in thyroid hormone levels, which is related to the degree of proteinuria and serum albumin levels³.

Several factors predict if patients will respond to therapy and ultimately go into remission. A study in the American Journal of Kidney Diseases looked at 62 Japanese adults with biopsy proven minimal change disease and found that an elevated blood urea nitrogen to creatinine ratio along with a worse protein selectivity index at presentation corresponded to a slower response to treatment. In addition, younger patients had a greater incidence of relapse and relapsed earlier⁴.

In the setting of relapse in adult patients with minimal change disease, there are numerous second-line medications that may be used. Waldman, et. al. compared the following individual therapies' effects on steroid dependent versus steroid resistant patients: cyclophosphamide, cyclosporine, tacrolimus and mycophenolate mofetil. Amongst the individual therapies, there was no statistically significant difference between those that were steroid dependent versus steroid resistant; however after combining all of the results, the steroid dependent group did better with a p-value of 0.010. This study did not clearly identify the doses or the duration of the individual therapies, which therefore makes it difficult to interpret¹.

In contrast, a study in the Netherlands from 1971-2003 followed an algorithm for treatment of minimal change disease in children. If patients had relapsing or steroid dependent disease after a full course of prednisone therapy, oral cyclophosphamide was given at 3mg/kg daily for 8 weeks, and if that therapy failed, cyclosporine at 5mg/kg/day was given to adjust for trough levels of 100-150ng/mL. Of the 93 patients that required cyclophosphamide therapy, 33 were successfully treated and did not relapse. The cumulative incidence of persistent, complete remission was noted to improve over time.⁵

In conclusion, although minimal change disease is more common in children, it does affect adults. Steroid therapy has been well established as first line therapy, however very little data exists in adults for second-line therapy in the setting of relapse. Randomized controlled trials are required to further identify the best treatment course in these patients.

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Submitted on August 23, 2014