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Adult minimal-change disease: observational data from a Taiwan center patient characteristics, therapies, and outcomes

Chia Yu Tsai , Ming Yuan Ko, Chiz Tzung Chang
Department of Internal Medicine-Nephrology, China medical university and hospital, Taiwan

Case Study : Background: Minimal change disease (MCD) is a common cause of nephrotic syndrome, but its clinical course and outcomes in Chinese populations are understudied. This observational cohort study examined MCD patients' characteristics, treatments, and outcomes in a Taiwanese university hospital. Methods: Data from 84 patients with biopsy-confirmed MCD between December 2007 and December 2024 were retrospectively analyzed. Baseline characteristics and outcomes were recorded, and predictors of relapse and remission were analyzed using multivariate logistic regression. Results: The median age was 35.2 years, with 61.9% male patients. At diagnosis, mean serum creatinine was 0.96 mg/dL (±0.81), mean albumin 1.90 g/dL (±0.67), and proteinuria 9.39 g/day (±6.44). Microscopic hematuria was present in 29.8% of patients. Remission occurred in 74 patients (88.1%) at a median of 6.1 weeks, while 51 (60.7%) experienced at least one relapse at a median of 18.29 weeks. Ten patients (11.9%) showed primary steroid resistance, with higher incidences of microscopic hematuria (60%, $p<0.05$) and diabetes (30%, $p<0.05$). Second-line therapy was used in 36 patients (42.9%). After a median follow-up of 3.6 years, 4 patients developed ESRD and 2 died. Cox regression analysis revealed that higher bodyweight was associated with increased remission risk (HR 1.03 [1.01–1.06], P = 0.008). Hematuria increased relapse risk (HR=3.31, 95% CI: 1.43-7.65, p=0.005), while higher proteinuria decreased relapse risk (HR=0.92, 95% CI: 0.85-0.99, per 1 g/day increase in PCR, p=0.035). Steroid resistance was significantly associated with dialysis dependency (p=0.005). Conclusions: While MCD generally responds well to steroid therapy, high relapse rates remain challenging. Hematuria and lower PCR are crucial in predicting relapse risk. Treatment response and disease evolution are generally favorable, but steroid-resistant patients face higher ESRD risk.

MCD-1.png

Table 1. Demographic and clinical characteristics of patients.

Demography and biochemistry	Total (n=84)	Relapse (n=51)	Non-relapse (n=23)	Steroid-resistant (n=10)	P Value
Age at diagnosis (Mean ±SD)	35.2±14.8	35.0±14.5	31.8±12.7	40.8±19.0	0.266[a]
Male (%)	61.9	64.7	65.2	40.0	0.315[b]
Body weight (kg)	69.5±14.8	70.3±15.8	70.0±11.8	67.1±17.2	0.947[a]
Laboratory at presentation					
Creatinine (mg/dL)	0.96±0.81	0.94±0.61	0.85±0.68	1.46±1.41	0.024[a]
PCR (g/day)	9.39±6.44	10.40±6.19	7.54±5.03	6.23±9.93	0.340[a]
Hemoglobin(g/dL)	14.3±1.9	14.0±1.8	14.8±1.6	13.2±2.6	0.203[a]
Albumin(g/dL)	1.90±0.67	1.80±0.58	1.80±0.34	2.40±1.15	0.029[a]
TG	216.0±174.6	186.0±150.5	213.0±119.0	315.0±291.8	0.066[a]
Cholesterol	396.5±146.7	397.1±142.4	419.0±161.7	333.0±128.5	0.338[a]
Other features at presentation					
Diabetes (%)	7.1	3.9	4.3	30.0	0.011[b]
Hypertension (%)	22.6	23.5	13.0	40.0	0.228[b]
Hematuria	29.8	29.4	17.4	60.0	0.048[b]
HBV (%)	7.1	9.8	0	10.0	0.296[b]
HCV (%)	1.2	0	4.3	0	0.261[b]

a: Data compared by Kruskal-Wallis test.

b: Data compared by chi-square test.

MCD-1.png

Table 3 . Associations between patient characteristics and time to remission and relapse by Cox-regression analysis.

Characteristic	Remission		Relapse	
	HR (95% CI)	P value	HR (95% CI)	P value
Age (years)	1.00 (0.98,1.02)	0.866	1.02(0.98,1.07)	0.323
BW	1.03(1.01,1.06)	0.008	0.99(0.95,3.78)	0.405
Gender		0.360		0.719
Male	1.47(0.65,3.32)		1.23 (0.40,3.17)	
Female	1		1	
Creatinine (mg/dL)	0.78(0.47,1.28)	0.318	0.87(0.27,2.78)	0.815
PCR (g/day)	1.04(0.98,1.10)	0.238	0.92 (0.85,0.99)	0.035
Albumin(g/dL)	1.01(0.61,1.67)	0.958	0.88 (0.43,1.80)	0.727
Hemoglobin(g/dL)	0.94(0.79,1.12)	0.476	1.03(0.86,1.23)	0.738
TG	1.000(0.997,1.002)	0.860	1.000(0.997,1.003)	0.981
Cholesterol	1.000(0.998,1.003)	0.792	1.001(0.998,1.004)	0.383
Hematuria	0.83(0.48,1.47)	0.527	3.31(1.43,7.65)	0.005
Hypertension	1.03(0.54,1.95)	0.935	2.65(0.77,9.06)	0.121
DM	0.96(0.25,3.71)	0.957	0.74(0.13,4.10)	0.729