

Usefulness of the cytokines expression of Th1/Th2/Th17 and urinary CD80 excretion in adult-onset minimal change disease

BACKGROUND

Minimal change disease (MCD) is a common form of nephrotic syndrome in adults. However, **the molecular mechanism underlying the pathogenesis of MCD remains incompletely understood.** In this study we aimed to investigate the role of the cytokines expression of Th1/Th2/Th17 and urinary CD80 excretion in adult-onset MCD patients.

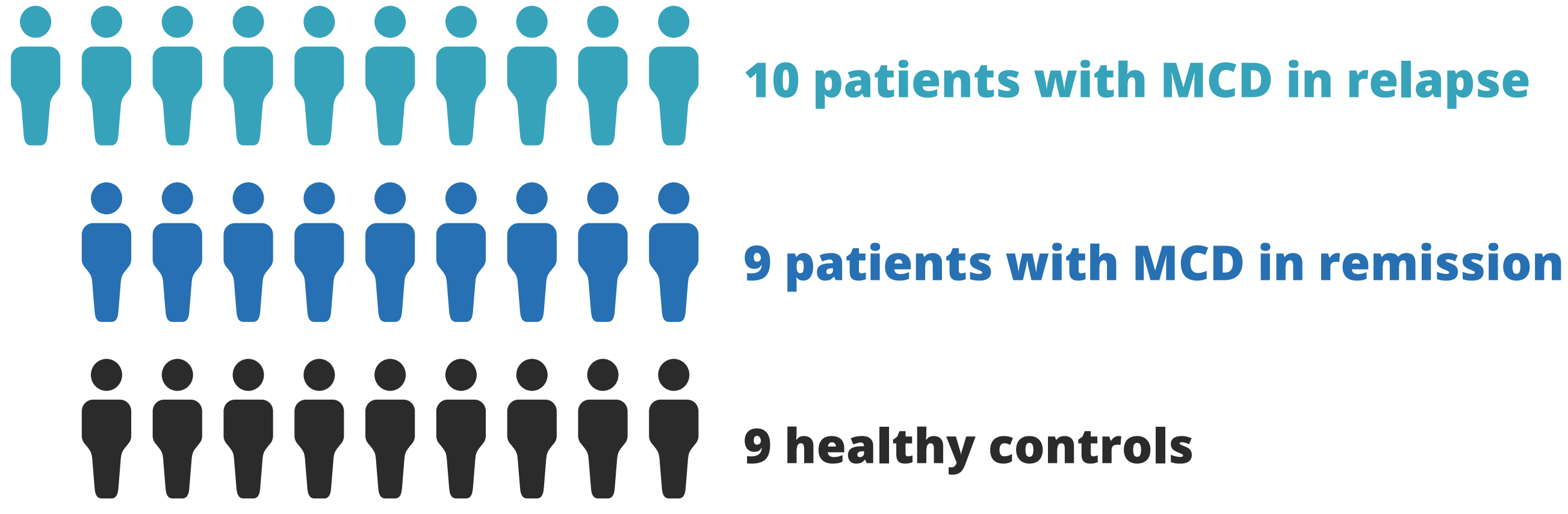


METHODS

The **lymphocyte subsets, 34 cytokine levels** of Th1/Th2/Th17, **serum and urine concentrations of CD80**, and **expression of CD80 in glomeruli** were analyzed in:

28 cases

(15 males and 13 females; average age: 34.1 years, age range: 18-56 years)

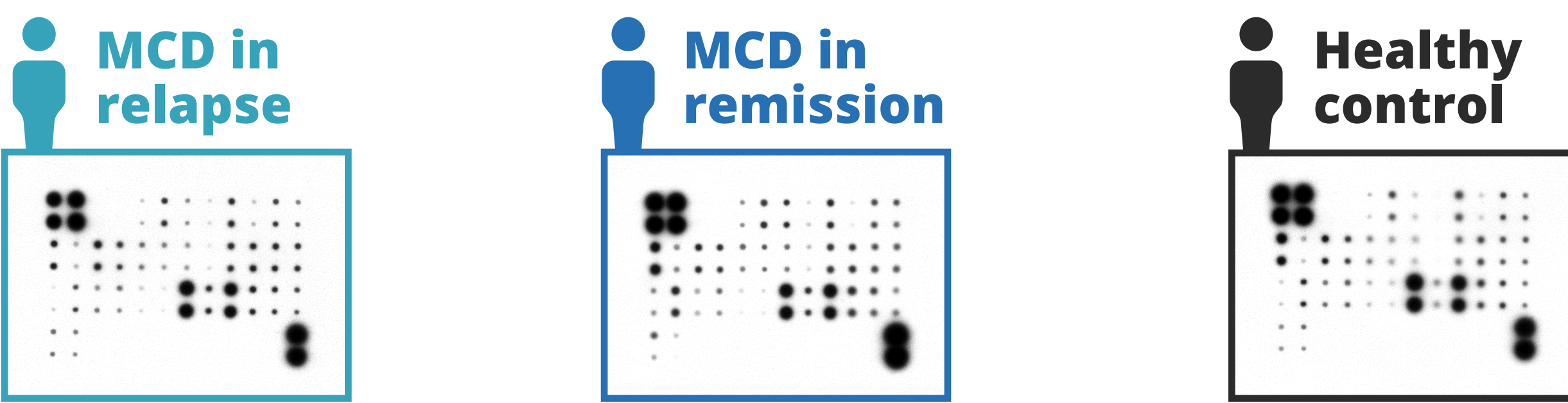


RESULTS

There was **no significant difference in CD3⁺CD4⁺ cell proportion** among patients with MCD in relapse, MCD in remission, and healthy controls (P=0.802).

The **cytokine levels** of GM-CSF and tumor necrosis factor (TNF)-related activation-induced cytokine (TRANCE) in patients with relapsed MCD was **1.5 times higher** than those in remission.

CYTOKINE PROFILES OF PATIENTS WITH MCD AND HEALTHY CONTROL



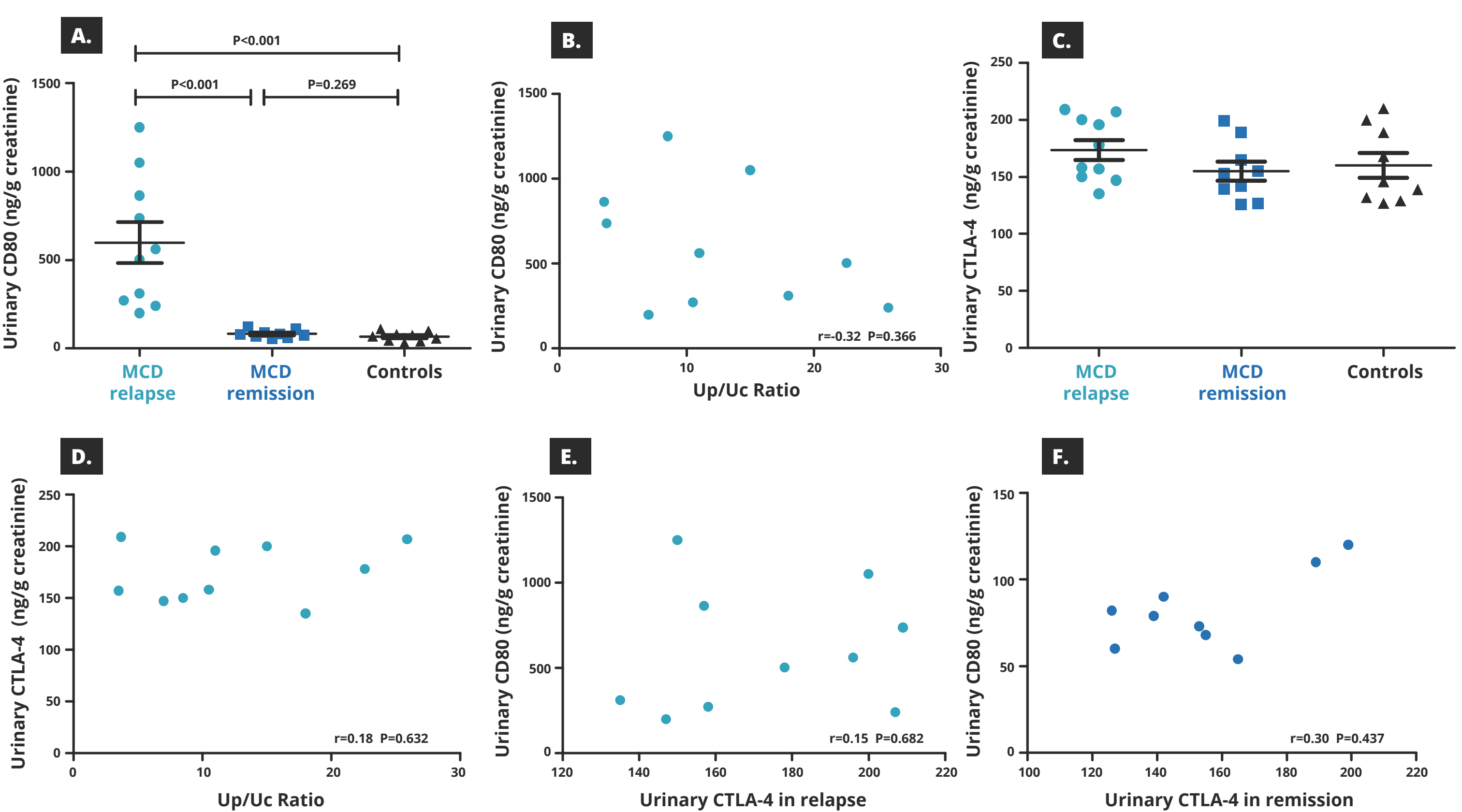
THE POSITION OF 34 HUMAN TH1-, TH2- AND TH17-RELATED CYTOKINES IN THE ANTIBODY-BASED MICROARRAY

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|----------|-----------|-----------|-----------|-----------|-------|-------------|---------|--------|--------|--------|-----------|
| 1 | POS1 | POS2 | POS3 | NEG | NEG | CD30 | CD40 Ligand | CD40 | G-CSF | GITR | GM-CSF | IFN-gamma |
| 2 | POS1 | POS2 | POS3 | NEG | NEG | CD30 | CD40 Ligand | CD40 | G-CSF | GITR | GM-CSF | IFN-gamma |
| 3 | IL-1 sRI | IL-1 sRII | IL-10 | IL-12 p40 | IL-12 p70 | IL-13 | IL-17A | IL-17F | IL-17R | IL-1 β | IL-2 | IL-21 |
| 4 | IL-1 sRI | IL-1 sRII | IL-10 | IL-12 p40 | IL-12 p70 | IL-13 | IL-17A | IL-17F | IL-17R | IL-1 β | IL-2 | IL-21 |
| 5 | IL-21R | IL-22 | IL-23 p19 | IL-28A | IL-4 | IL-5 | IL-6 | IL-6 sR | MIP-3α | sgp130 | TGF-β1 | TGF-β3 |
| 6 | IL-21R | IL-22 | IL-23 p19 | IL-28A | IL-4 | IL-5 | IL-6 | IL-6 sR | MIP-3α | sgp130 | TGF-β1 | TGF-β3 |
| 7 | TNF-α | TNF-β | TRANCE | NEG | NEG | NEG | NEG | NEG | NEG | NEG | NEG | NEG |
| 8 | TNF-α | TNF-β | TRANCE | NEG | NEG | NEG | NEG | NEG | NEG | NEG | NEG | NEG |

An evident **increase in the excretion of urinary CD80** was found in patients with relapsed MCD compared with those in remission (598.4±115.8 vs 81.78±7.04 ng/g creatinine, P<0.001) and healthy controls (598.4±115.8 vs 67.44±8.94 ng/g creatinine, P<0.001).

CD80 expression was observed in the podocytes of patients with relapsed MCD using immunofluorescence.

CD80 URINARY CONCENTRATIONS (NG/G CREATININE) IN PATIENTS WITH MCD AND HEALTHY CONTROLS



CONCLUSIONS

The cytokines GM-CSF and TRANCE and the urinary CD80 levels are elevated in adult-onset MCD patients that have relapsed. This suggests a **Th1/Th2/Th17 balance disorder** and indicates that the elevated excretion of CD80 **may underlie the pathogenesis and development of adult-onset MCD.**