P458

P458 -Increased TACE and NLRP3 gene expression in chronic kidney disease (CKD) patients.

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Background

Chronic kidney disease (CKD) is a worldwide public health issue with high rates of morbidity and mortality. Increased inflammation is known to promote kidney fibrosis during CKD development. Tumour necrosis factor-α-converting enzyme (TACE), a metalloprotease of the ADAM family involved in Notch signalling and precursor of TNFα is reportedly involved in the increased inflammation experienced during kidney fibrosis. NLR Family Pyrin Domain Containing 3 (NLRP3) inflammasome is known to generate inflammatory cytokines IL-1β and IL-18 which are suggested to be involved in kidney fibrosis. This study aimed to investigate TACE and NLRP3 gene expression in CKD patients in order to better understand their involvement in CKD development and progression.

Methods

CKD patients were recruited from an outpatient renal clinic and apparently healthy controls were invited via an email advertisement that was sent to university staff. All participants gave informed written consent and provided a blood sample. Buffy coat was isolated from the collected samples and RNA was extracted and converted into cDNA. TACE and NLRP3 gene expression were quantified.

Results

A total of 27 CKD patients (age 65±12 years) and 20 apparently healthy controls (44±10 years) were recruited to this study. CKD patients were stage 2 to 5 and 67% were male. 74% of patients had hypertension and 44% had diabetes (Table 1). TACE and NLRP3 gene expression were increased by 3.44-fold ($p=<0.001$) and 2.76-fold ($p=<0.001$) respectively when compared to healthy controls (Figure 1).

Conclusion

This study reports that TACE and NLRP3 gene expression are simultaneously increased in CKD patients at varying disease stages compared to healthy controls reflecting the underlying inflammatory mechanisms which contribute to fibrosis. This shows that TACE and NLRP3 could constitute potential biomarkers for identifying individuals at higher risk of developing CKD. Ongoing longitudinal studies could provide further evidence to whether the increase of TACE and NLRP3 expression correlates with disease progression in CKD.