Altered gene expression of lysophosphatidic acid receptor subtypes in ischemia/reperfusion-induced renal interstitial fibrosis in mice

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Lysophosphatidic acid (LPA) is a bioactive lysophospholipids that regulates multiple biological functions. Several studies showed an increased urinary LPA level in chronic kidney disease (CKD) patients and animal models, suggesting that the local expression levels of LPA and LPA receptor subtypes are important for the development of CKD. However, the role of LPA in the transition of acute kidney injury (AKI) to CKD remains unknown. Renal ischemia/reperfusion (IR) can induce AKI, which often progresses to CKD. To study the role of LPA on the transition of AKI to CKD, we used a murine unilateral renal IR injury (uIRI) model without contralateral nephrectomy. On 14 days after IR, interstitial fibrosis and renal atrophy were observed. Real-time PCR analysis demonstrated significant upregulation in the expression of LPA type1 receptor subtype (LPA_1) and LPA_2 and downregulation of LPA_3. We also examined the involvement of LPA_1 in the development of interstitial fibrosis and renal atrophy. Pharmacological inhibition of LPA_1 with Ki16425 did not affect interstitial fibrosis and atrophy by IR. These results suggest that further investigation including the involvement of other LPA receptor subtypes is necessary.