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Letter to the Editor

# Senior-Løken syndrome with IQCB1 mutation in Taiwan

*Dear Editor,*

Senior-Løken syndrome is a rare autosomal recessive disorder, characterized by nephronophthisis and early onset retinal dystrophy [1]. Most patients with Senior-Løken syndrome developed blindness and end stage renal disease in the first two decades. Several genes were identified as the disease-causing genes of Senior-Løken syndrome, including NPHP1-6 and NPHP10 [2]. We present a case of Senior-Løken syndrome caused by *IQCB1* mutation in Taiwan.

A 21-year-old girl was referred to our division due to renal function impairment. She had poor vision since birth and the electroretinogram was non-detectable (data not shown), which was compatible with Leber congenital amaurosis. Reviewing her family history, she was born to non-consanguineous parents because her father's family moved from China to Taiwan in the year of 1949 and her mother was a native Taiwanese. Laboratory examination showed blood urea nitrogen: 53.5 mg/dL, serum creatinine: 7.02 mg/dL, with estimated glomerular filtration rate of 7.32 mL/min per 1.73 $m^2$ according to the 4-variable MDRD equation. There was no proteinuria, hematuria but marked diluted urine with specific gravity of 1.006 in the urine. Renal ultrasonography showed decreased kidney size with hyperechogenic cortex and multiple medullary cysts (Fig. 1A). Hemodialysis started at the age of 22, followed by an ABO-incompatible kidney transplant from her father at the age of 25. Her serum creatinine was 0.76 mg/dL after three years of transplant.

Whole exome sequencing was performed and compound homozygous non-sense p.R364* (c.1090C > T) mutations were found in the *IQCB1* gene (Fig. 1B and C). Both parents were heterozygous of *IQCB1* p.R364*. An exactly same mutation was reported in two Chinese siblings [2]. Furthermore, the mutation resided in a run of homozygosity (ROH) region spanning 3.36 cM with a total calculated identity by descent (IBD) segment of 54 cM. This suggested the parents may have a common ancestor nine generations ago.

Senior-Løken syndrome is a rare syndrome with a combination of nephronophthisis and retinal degeneration which was first described by Senior and Loken in 1961 [3,4]. Patients with nephronophthisis usually have polyuria, polydipsia, and nocturia due to loss of urinary concentration ability. Development of end stage renal disease is usually inevitable [2]. There are variable visual presentations ranging from retinitis pigmentosa to Leber's amaurosis [1]. IQCB1 is expressed in the connecting cilia of photoreceptors and in the primary cilia of renal epithelial cells. *IQCB1* mutation, leads to Senior-Løken syndrome type 5, induces defect of epithelial cell integrity in kidney and eye with resultant of nephronophthisis and retinal lesion [5].

Here we present a patient who had typical ophthalmic and renal presentation of Senior-Løken syndrome type 5 caused by *IQCB1* mutation and no disease recur after 3 years of live kidney transplant from her father. We made the diagnosis by using whole exome sequencing which provided both the molecular diagnosis and the remote consanguinity of the parents.

Conflicts of interest: All authors declare no conflicts of interest.

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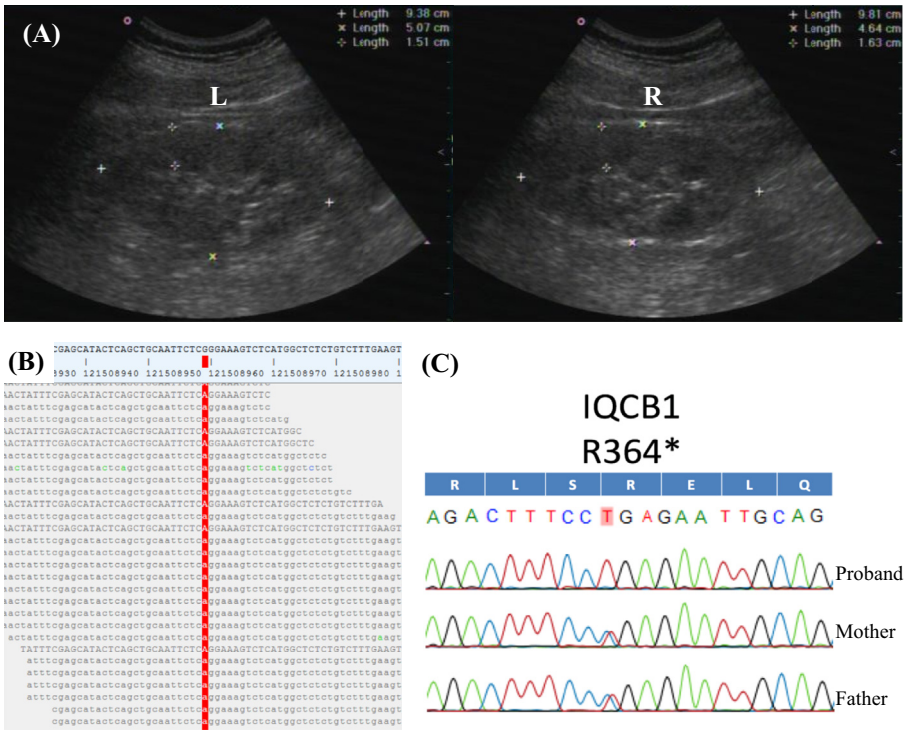


**Figure 1.** The kidney sonography showed multiple medullary cysts and bilateral mild atrophic kidneys (A). Whole exome sequencing (B) and Sanger sequencing (C) of compound homozygous non-sense p.R364* (c.1090C > T) mutations of *IQCB1* gene. L, left kidney; R, right kidney.

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