中文題目：Senior-Løken syndrome-IQCB1/NPHP5 基因突變之案例報告

英文題目：A case of Senior-Løken syndrome with IQCB1/NPHP5 gene mutation

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Introduction

Senior-Løken syndrome (SLSN), also known as hereditary renal-retinal syndrome, is a rare autosomal recessive disorder. It was characterized by nephronophthisis (medullary cystic kidney disease) and early onset retinal dystrophy. Patients suffered from Senior-Løken syndrome typically developed blindness and end stage renal disease before the age of 20 years. Several genes were identified as disease-causing genes of Senior-Løken syndrome, including of NPHP1-6 and NPHP10. Mutation of IQCB1(IQ motif containing B1), previously NPHP5 gene, leads to Senior-Løken syndrome type 5 (SLSN5). Herein, we present a case diagnosed as Senior-Løken syndrome type 5 in Taiwan.

Case presentation

A 21-year-old girl was referred to our division due to renal function impairment in 2010. She had poor vision since birth and the electroretinogram (ERG) was non-detectable, with possible diagnosis of Leber congenital amaurosis. At presentation, she became almost blind. Laboratory examination showed advanced renal failure (blood urea nitrogen: 53.5 mg/dL, serum creatinine: 7.02 mg/dL). Estimated glomerular filtration rate (eGFR) was 7.32 mL/min per 1.73 m^2 according to 4-variable MDRD equation. Normocytic anemia was also found (Hb: 10.9g/dL, Hct: 32.8 %, MCV: 92.7 fl). There's no proteinuria, hematuria or pyuria shown by urinalysis. Renal ultrasonography disclosed decreased kidney size with hyperechogenic cortex and multiple medullary cysts. Progressive renal function deterioration persisted and she received hemodialysis in 2011. Whole exome sequencing was performed and revealed homozygous non-sense p.R364* (c.1090C>T) mutation in IQCB. Senior-Løken syndrome type 5 (SLSN5) was diagnosed.

Discussion

Senior-Løken syndrome (SLSN) is a rare renal ocular condition which was first described by Senior et al., and Loken et al., in 1961. It is a combination of nephronophthisis (medullary cystic kidney disease) and retinal degeneration. Patients with nephronophthisis generally have the symptoms of polyuria, polydipsia, and nocturia. Development of end stage renal disease is usually inevitable. Referring to retinal lesion, there's variable presentations ranging from retinitis pigmentosa to Leber's amaurosis. Furthermore, in addition to retinal and renal manifestations, other organ may be involved such as liver fibrosis in several types of SJSN. In contrast, Senior-Løken syndrome type 5 (SLSN5) is classic, with pure retinal-renal phenotype. It is mainly caused by mutation of IQCB1/ NPHP5 gene, which encodes nephrocystin-5. Nephrocystin-5 is expressed in

the connecting cilia of photoreceptors and in the primary cilia of renal epithelial cells. Therefore, IQCB1/ NPHP5 mutation will induce defect of epithelial cell integrity in kidney and retina, causing nephronophthisis and retinal lesion. Here we present a patient who had typical ophthalmic and renal disorder. Senior-Løken syndrome should be considered in patients with visual impairment and renal failure in the first two decades of life. Hence, detailed and regular renal function evaluation must be performed in all young patients with retinal dystrophy.