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Neuronal defects an etiological factor in congenital pelviureteric junction obstruction?

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Summary *Introduction:* Congenital pelviureteric junction obstruction (PUJO) is one of the most frequent causes of neonatal hydronephrosis. Obstruction at the PUJ has potential severe adverse outcomes, such as renal damage. While pyeloplasty has been established as the definitive treatment, the exact pathophysiology of congenital PUJO remains unknown. Recent research has proposed neuronal innervation defects as an etiological factor in congenital PUJO. We aim to study the expression of various neuronal markers in PUJO specimens compared with controls, and evaluate whether severity of renal disease or dysfunction pre-operatively is related to expression of neuronal markers in resected PUJO specimens.

Materials and methods: All consecutive patients who underwent dismembered pyeloplasty at KK Women's and Children's Hospital, Singapore, for intrinsic PUJO from 2008 to 2012 were included. Patients with other co-occurring renal pathologies were excluded. Controls were obtained from nephrectomy patients with Wilm's tumor or other benign renal conditions during the same period. Specimens were stained immunohistochemically with neuronal markers protein gene product 9.5 (PGP9.5), synaptophysin, and S-100, and with CD-117, a marker for interstitial cells of Cajal (Table). Levels of expression of the markers were assessed semiquantitatively (decreased, increased or no change) in comparison with controls by two independent observers. Pre-operative data of patients' renal anatomical (ultrasonography