# Karakterisasi molekuler gen steroid 5-alpha reductase type 2 (SRD5A2) pada pasien 46, XY dengan hipospadia = Molecular characterization steroid 5 alpha-reductase type 2 (SRD5A2) gene in 46, XY patients with hypospadia

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Abstrak

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Hipospadia merupakan salah satu kelainan genitalia paling umum yang ditemukan pada bayi lelaki baru lahir, yang ditandai adanya meatus uretra di ventral dan bentuk abnormal dari kulup penis. Etiologi hipospadia sebagian besar masih belum diketahui, tetapi dilaporkan dipengaruhi oleh faktor genetik dan lingkungan. Salah satu kelainan genetik adalah defek gen steroid 5 alpha-reductase type 2 (SRD5A2). Belum banyak laporan mengenai faktor genetik pada gen SRD5A2 yang melatarbelakangi hipospadia di Indonesia. Teknik PCR-sekuens dilakukan pada ekson 1-5 gen SRD5A2 pada 40 sampel DNA arsip penyandang hipospadia, dan PCR-RFLP pada ekson 1 dan 4 untuk mendeteksi mutasi p.Val89Leu dan p.Arg227Glu. Hasil penelitian mendapatkan 8 mutasi pada gen SRD5A2, yaitu mutasi p.Gly34Fs, p.Arg50His, p.Val89Leu 3 di ekson 1, p.Tyr128Cys di ekson 2, p.Asn193Ser dan p.Arg227Gln di ekson 4, p.Ile253Val di ekson 5, dan c.281+15T>C di intron 1. Studi in silico untuk memprediksi fungsi dan struktur protein adalah possibly dan/atau probably damaging untuk p.Gly34Fs, p.Arg50His, p.Tyr128Cys, p.Asn193Ser, dan p.Arg227Gln, dan benign untuk p.Val89Leu, Ile253Val, dan c.281+15T>C. Mutasi p.Arg50His dan p.Ile253Val merupakan mutasi baru yang belum pernah dilaporkan di populasi lain. Penelitian ini mendapatkan 8 mutasi pada penyandang hipospadia di Indonesia dan 2 diantaranya merupakan mutasi baru. Selain itu penelitian ini berhasil mengembangkan teknik PCR-RFLP untuk mendeteksi substitusi p.Val89Leu dan p.Arg227Glu. Teknik tersebut dapat diterapkan untuk

<hr><i>ABSTRACT

Hypospadias is one of the most common external genitalia congenital abnormalities found in newborn baby boys, which is characterized by urethral opening, penile curvature, and abnormal distribution of the penis foreskin. The etiology of hypospadia is mostly unknown, but it is believed that hypospadias are caused by genetic and environmental factors. There have not been many reports on variations of steroid 5 alpha-reductase type 2 (SRD5A2) gene underlying hypospadias in Indonesia. The PCR-sequencing technique on exon 1-5 SRD5A2 gene were performed on 40 archived DNA samples from hypospadias cases of aged 0-29 years, and PCR-RFLP on exon 1 and 4 to detect mutation p.Val89Leu and p.Arg227Glu. The sequencing result showed that there were eight different mutations identified in the SRD5A2 gene, p.Gly34Fs, p.Arg50His, p.Val89Leu 3 in exon 1, p.Tyr128Cys in exon 2, p.Asn193Ser dan p.Arg227Gln in exon 4, p.Val89Leu in exon 5, and c.281+15T>C in intron 1. In silico analysis showed 5 mutations predicted to be possibly and/or probably damaging (p.Gly34Fs, p.Arg50His, p.Tyr128Cys, p.Asn193Ser, and p.Arg227Gln) and 3 benign mutations (p.Val89Leu, Ile253Val, and c.281+15T>C). p.Arg50His and p.Ile253Val are new mutations that have never been reported before. This study found 8 mutations obtained from hypospadias

patients and successfully developed the PCR-RFLP technique to detect p.Val89Leu and p.Arg227Gln mutations, which can be applied as a starting point for mutation detection in places where the mutations frequently detected and access to sequencing technique is limited.