Neonatal Diabetes in a Singapore Children’s Hospital: Molecular Diagnoses of Four Cases

Rashida F Vasanwala, 1MBBS, MD (Paeds), MRCPCH (UK), Song Hai Lim, 2MBBS (Malaya), MRCPCH (UK), Sian Ellard, 3PhD, FRCPPath, Fabian Yap, 1MMed (Paeds), FRCPCH (UK), FAMS

Abstract

Introduction: Neonatal diabetes (ND) presents below 6 months of age, and is caused by a genetic defect in glucose homeostasis. Molecular genetic diagnosis can identify the exact molecular aetiology and guide clinical management. The objective of this study was to identify ND among children with diabetes in a major children’s hospital in Singapore and to characterise their molecular and clinical features. Materials and Methods: The study identified all infants below 6 months of age who presented with diabetes to our centre from January 2008 to December 2010. It also reviewed diabetes database comprising 662 patients, to identify those who were diagnosed with diabetes below 6 months of age between January 1997 and December 2010. Four patients (3 females and 1 male) were identified and their molecular aetiology was investigated. Results: A molecular aetiology was found in each of the 4 patients identified. Two patients (Patient 1 and 2) had permanent ND (PND). Patient 1 who has KCNJ11/R201H mutation was successfully switched from insulin to oral glibenclamide and Patient 2 who has a novel mutation INS/C109Y continues to be treated with insulin. Two patients (Patient 3 and 4) had transient ND (TND) and no longer require insulin or any other intervention to maintain normoglycaemia. Patient 3 has a novel mutation ABCC8/F1182S and Patient 4 has a paternal duplication on chromosome 6q24. Conclusion: This study identified 4 cases of ND in our cohort of diabetes children and confirmed their molecular diagnosis. Molecular genetic testing for these children led to accurate diagnosis and appropriate management.

Key words: Monogenic diabetes, Permanent, Transient


1Department of Paediatric Medicine, KK Women’s and Children’s Hospital, Singapore
2Department of Paediatrics, Putrajaya Hospital, Malaysia
3Department of Molecular Genetics, Royal Devon & Exeter NHS Foundation Trust, United Kingdom

Address for Correspondence: Dr Rashida F Vasanwala, Endocrinology Service, Department of Paediatric Medicine, KK Women’s and Children’s Hospital, 100 Bukit Timah Road, Singapore 229899.
Email: rashidafv@hotmail.com