EDITORIAL

Clinical Decision Making for Precision Medicine in Diabetes

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Guest Editor

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For many decades, the diabetes field focused on two predominant forms of diabetes – type 1 and type 2 diabetes. While the distinction between these two forms of diabetes was clear, the variability within these types of diabetes was less appreciated. Even less attention was given to other forms of diabetes, including (but not limited to) monogenic diabetes, cystic fibrosis-related diabetes, and pancreatogenic diabetes. Over the past decade, the heterogeneity of diabetes has been increasingly recognized, and along with it the need to become more precise and personalized with our diagnosis and treatment of all forms of diabetes.

In this first Diabetes-focused issue of *SMART-MD Journal of Precision Medicine*, our authors highlight important clinical considerations in delivering diabetes care. In this issue, we will highlight current care for Cystic Fibrosis Related Diabetes (CFRD)[1] which affects a large proportion of patients with CF. While insulin therapy is the standard of care for CFRD, newer studies recognize the changing face of CFRD, including individualized insulin therapies, use of technology, and in some cases, non-insulin medications, depending on the specific patient needs and characteristics. We will also highlight the current understanding of monogenic diabetes.[2] With greater access to clinical genetic testing, more cases of monogenic diabetes are being identified, sometimes with important implications for treatment selection.

We also include in this issue several papers that highlight the heterogeneity of type 1 diabetes. While once considered only a disease of childhood, it is now recognized that type 1 diabetes onset occurs just as often in adults, but that the trajectory of beta cell destruction by autoimmunity is often more indolent and may be more difficult to diagnose in adults.[3] For both children and adults, early diagnosis – even before the onset of diabetes-range hyperglycemia – has important therapeutic implications. Only recently the first FDA-approved medication for treating pre-symptomatic type 1 (teplizumab) was introduced with potential to delay onset of clinical diabetes for several years, potentially shifting the paradigm for how we treat diabetes now and in the future.[4] For those with long-standing type 1 diabetes, the past 15 years have seen significant technological advancements with continuous glucose monitoring and automated insulin delivery systems; the wide variety of technologies now on the market are discussed in this issue with patient-specific considerations that drive treatment selection.[5] Lastly, we consider new innovations in type 1 diabetes, including what we might learn from imaging the pancreas.[6]

We hope that this issue will be a helpful clinical reference for endocrinologists, primary care physicians, diabetes educators, and other health professionals who see patients with diabetes. Beyond the current special Diabetes issue, we plan to bring you more content on diabetes in SMART-MD. Future issues will include updates on the subtypes of type 2 diabetes, and the current state of knowledge in pancreatogenic diabetes. It is important that clinicians and academics recognize the advancing understanding of the pathophysiology and heterogeneity within diabetes, to deliver accurate and early diagnoses, treatments, and potentially prevention in the future.

References:

1. Nellie Hani, MD, Shauna Runchey, MD, Faisal Aljabrain MBBS, Christine L. Chan, MD. Cystic Fibrosis-Related Diabetes: A Practical Guide for Endocrinologists (in press).
2. Ortega MD, H. I., & Gloyn, DPhil, A. L. . (n.d.). Precision Diagnostics for Monogenic Diabetes in Children. SMART-MD Journal of Precision Medicine, 2(2), e119 - e128. https://doi.org/10.69734/1e8v6h36
3. Anna Casu MD, Ananya Bhatheja BA, & Tina K. Thethi MD. (n.d.). Immunology and clinical approach to adult-onset type 1 diabetes. SMART-MD Journal of Precision Medicine, e111 - e118. https://doi.org/10.69734/71yw1j63

4. Felton, J. L., Tuttle, A., & Sims, E. K. (n.d.). Teplizumab-mzwv: Perspective on clinical practice & use at a single institution. SMART-MD Journal of Precision Medicine, 2(2), e149 - e157. https://doi.org/10.69734/59hkbn82

5. Tabatabai MD, I., & Forlenza, G. (n.d.). Current State of Automated Insulin Delivery Options For Diabetes Management: A Primer For The Clinician. SMART-MD Journal of Precision Medicine, 2(2), e139 - e148. https://doi.org/10.69734/92xeed68

6. Haberl MD, E. S., & Virostko, Ph.D., MSCI , J. (n.d.). Imaging Findings of Pancreatic Changes in Type 1 Diabetes. SMART-MD Journal of Precision Medicine, 2(2), e105 - e109. https://doi.org/10.69734/wfpe8y95