Conclusion: This case illustrates the management dilemma between an unusual combination of diseases. The balance of potassium levels between insulin use in T1DM and FHPP creates significant challenges. Fortunately, the use of subcutaneous insulin in this patient did not appear to trigger episodic weakness. Further studies of hypokalemic periodic paralysis are critical to the institution of appropriate therapy and prevention of symptoms in patients with these conditions. Careful replacement and monitoring of potassium is recommended as patients require high doses of potassium during acute episodes of flaccid paralysis, and requirement significantly decreases after an acute episode.

Diabetes Mellitus and Glucose Metabolism

TYPE 1 DIABETES

Virtual Pump Trainings for the t:slim X2 Insulin Pump With Control-IQ Advanced Hybrid Closed-Loop Technology: Real World Patient Experience

Harsimran Singh, PhD, Michelle Manning, MA, Molly McElwee-Malloy, RN, ADCES (CDE), Steph Habif, EdD, MS.
TANDEM DIABETES CARE, INC., SAN DIEGO, CA, USA.

The COVID-19 pandemic led to a digital evolution in the healthcare industry by necessitating widespread adoption of telehealth and other remote services to enable engagement with patients. Diabetes management is well suited for telehealth utilization if patients employ technology that efficiently generates, captures, and shares data with providers. Traditionally, training for automated insulin delivery devices is provided in-person to allow for a thorough understanding of the device and its use. However, during COVID-related quarantine regulations, most of these trainings needed to be conducted virtually. We performed a retrospective analysis of patient reported outcomes in people with diabetes who completed their training for the t:slim X2 pump with Control-IQ technology between April and September, 2020 and had uploaded 30 days of pump usage data to Tandem's t:connect® web application. Most participants were adults (90%), female (54%), and had type 1 diabetes (89.9%). Mean age of the sample was 46 years (SD=18.7). Of all 1,686 participants, 1,256 had received virtual pump training while the remaining were trained in-person (n=430). Most participants reported completing their training in 1 to 2 hours (61.5%). After concluding training, participants completed an online questionnaire evaluating their training experience (8 items). Item response options included a 5-point Likert scale with higher values reflecting greater satisfaction and better experience with training. Multivariate analysis of variance indicated a significant effect of training method (virtual vs. in-person) on training-related experience (p=.020). Specifically, participants receiving virtual pump training reported greater overall satisfaction with their training (4.78 vs. 4.65, p=.012) and with the time when their training was conducted (convenient scheduling) (4.74 vs. 4.56, p=.008) compared to their counterparts who underwent in-person training. There were no significant differences between virtually trained and in-person participants on pace of training (4.71 vs. 4.57), trainer's pump knowledge (4.82 vs. 4.74), trainer's ability to answer their questions (4.77 vs. 4.70), and participants' confidence to use the pump after training (4.62 vs. 4.53). In conclusion, all participants irrespective of their training method (virtual or in-person) reported a positive experience with their training for using the t:slim X2 pump with Control-IQ technology. Participants' high scores on items evaluating their training method also reflects that their expectations of their training session were either met or exceeded. State-of-the-art technologies supporting diabetes management may benefit from patient-centric training methods to enable widespread optimal use. For future studies, it will be interesting to evaluate adherence to therapy by training method and relationship with glycemic outcomes.

Diabetes Mellitus and Glucose Metabolism

TYPE 2 DIABETES

A Pilot Study of External Counterpulsation on Reactive Hyperemia, Levels of Glycemia and Metabolic Parameters in Type 2 Diabetes Mellitus

Caroline Wei Shan Hoong, MBBS, MMed, MRCP, Maudrene Tan, PhD, MSc, BA, Shih Ling Kao, MBBS, MRCP, MMed, Eric Yin Hao Khoo, FRCP, MD, MBBS.
National University Health System, Singapore, Singapore.

Introduction: External counter-pulsation (ECP) involves cuff inflation over the lower extremities to generate sheer stress, thereby improving endothelial function and anginal symptoms in coronary artery disease. Endothelial dysfunction is also involved in the pathogenesis of T2DM. We hypothesized that 1) ECP will be associated with an improvement in endothelial function in T2DM as measured by peripheral artery tonometry, and 2) explored whether this would vary with different dose and frequency regimens. A shorter or less intensive regimen could potentially reduce cost and improve patient compliance if a similar therapeutic response is achieved.
Methods: This single-center prospective study in a tertiary institute in Singapore involving 46 adults with T2DM of HbA1c between 7 to 10%, who were randomly assigned to receive 35 sessions of ECP at different regimens and duration. Subjects in arm 1 received 1-hour daily sessions 5x per week for 7 consecutive weeks, subjects in arm 2 received 0.5-hour sessions 5x per week for 7 consecutive weeks, and subjects in arm 3 received 1-hour sessions 3x per week for 12 consecutive weeks. Endothelial function was evaluated by reactive hyperemia index (RHI) via peripheral arterial tonometry measured at the start, midpoint and end of study. Other secondary outcomes included fasting glucose, homeostatic model assessment of insulin resistance (HOMA-IR), HbA1c, blood pressure, lipid profile, weight and vibration sense.
Results: 42 subjects completed the 35-session course of ECP. Mean age was 56.1±9.3 years, duration of diabetes 8.8±4.7 years, baseline RHI 2.0 (1.3–3.7) and baseline HOMA-IR was 3.1 (0.5–18.7). All regimes of ECP were well-tolerated. There was no change in RHI across all 3 regimens of ECP individually or collectively at the end of the study (ΔRHI +0.01%, p=0.458). Glycaemic markers of fasting glucose, HbA1c and HOMA-IR, as well as blood pressure, lipid profile, weight and vibration sense also