Prevalence of risk factors and burden of diabetic foot disease amongst patients on haemodialysis

Shah P; Connolly M; Knott A; Ledson T; Srinivas-Shankar U Wirral University Teaching Hospital

Aims: The aim of this study was to assess the prevalence of diabetes foot disease and its risk factors amongst patients undergoing haemodialysis.

Methods:This was a cross-sectional observational study of all patients with diabetes undergoing hemodialysis at a University Teaching Hospital. Case notes were reviewed for baseline characteristics, micro and macrovascular complications, past foot ulceration and amputation. Patients were examined for neuropathy, peripheral pulses, foot ulceration, and foot deformity.

Results:55/137 (40.1%) patients receiving haemodialysis in hospital had diabetes. History and clinical examination was performed on 48 patients {mean age (SD), 64.3 (13.1) years}. 26/48 (54.2%) patients were male. Hypertension (89.6%) and hyperlipidemia (70.8%) were the most frequent comorbidities. 10.4% patients reported symptoms of intermittent claudication. 16.2% patients had venous eczema. 78.3% patients had at least one palpable pulse. Neurotip perception was impaired in 55.2% and 50% of patients in the left and right foot respectively. Vibration perception was impaired in 28.6% and 30.8% of patients at the left and right metatarsophalangeal joint area respectively. Foot deformity was present in 38.5% patients. 8 (16.7%) patients had a previous amputation, 5 (10.4%) patients had past Charcot neuroarthropathy and 9 (18.7%) patients had a current foot ulcer.

Conclusions: There is a high prevalence of risk factors along with past and current foot disease amongst patients, with diabetes on haemodialysis, highlighting the need for enhanced surveillance and early treatment.

Achieving glycaemic control in patients with diabetes on hemodialysis *Shah P; Connolly M; Knott A; Ledson T; Srinivas-Shankar U Wirral University Teaching Hospital*

Aims: Optimising glycaemic control in patients with end stage renal disease on haemodialysis can be a challenge. The aim of this study was to determine the treatment modalities in use to achieve optimal glycaemic control in these patients.

Methods: This was a cross-sectional observational study of patients with diabetes on haemodialysis at a University Teaching Hospital. Data collected included baseline characteristics, type and duration of diabetes, baseline biochemistry, treatment modality for diabetes and glycaemic control.

Results: 55/137 {40.1%, n (%)} patients undergoing haemodialysis had diabetes. Data was available for 48 patients {mean age (SD), 64.3 (±13.1) years}. 39 (81.3%) patients had Type 2 diabetes. Mean duration of diabetes was 19.6 (±10.2) years. Body mass index was 29.3 (±6.2) with 30 (66.6%) patients being either overweight or obese. HbA1c was 52.5 (±17.6) mmols/mol and serum creatinine was 560 (±229) (nr 59–104 umol/L). 14 (29.2%) patients were on diet-control alone. 25 (52.1%) patients were on insulin and 13/25 (46.4%) of these patients were on a basal bolus regimen. The total insulin dose was 36 (±24) units. 9 (18.8%) patients were treated with oral hypoglycaemic agents (4 patients on sulfonylureas and 5 patients on dipeptidyl peptidase-4 inhibitors). Only 2 (4.2%) patients were on both insulin and OHA.

Conclusion: Despite the expanded armamentarium of therapeutic agents to treat diabetes, insulin remains the commonest treatment modality amongst patients with diabetes on haemodialysis.

Inpatient audit for recurrent DKA(Diabetic ketoacidocis) to highlight areas for service improvement in Warrington hospital *Rubab UR; Chattington PD; AHMAD MA Warrington and Halton Hospital*

Objectives: A portion of patients with type 1 diabetes who were repeatedly admitted for diabetes ketoacidosis (DKA) management. This audit was to evaluate the precipitants + management of recurrent DKA in a district hospital in line with national guidelines with a view to introducing measures to reduce the incidence.

Methods: A systemic review of data from 218 patients hospitalised for DKA between 2017 and 2018 at our trust

Result: A total numbers of 21(9.6%) were coded as recurrent DKA (2 or more episodes in year) (male to female 4:3) and age (18 to 78) with mean age of 42. Out of the 21 cases with recurrent DKA, 14 (67%) had a true recurrent DKA. Other 8 were admitted for other reasons, which include nonketotic hyperglycaemia and hyperosmolar hyperglycaemic state (HHS).

For the 14 with recurrent DKA HBA1c nearest to the time of admission was 79 to 143mmol/mol, with a mean reading of 102mmol/mol.

The main precipitant factor identified was infection in 9 patients (43%) other factors include compliance and eating disorder.

Only 3/14 patients were offered psychological support . All patients had at least one post DKA review with diabetes specialist nurse. All had at least one phone contact and many patients had frequent DSN support.

Conclusion:. Although we have been implementing national guidelines, our management is still suboptimal in several areas, especially in providing psychological support for patients who had more than one episode of DKA. We hope to have the service of a psychologist to work with patients having recurrent DKA as many of this group have complex needs

Similar variability of fasting and 24-h self-measured plasma glucose (SMPG) with insulin glargine 300 U/mL (Gla-300) vs insulin degludec 100 U/mL (IDeg-100) in insulin- naïve adults with T2DM: the randomised BRIGHT trial *Cheng A; Ritzel R; Bosnyak Z; Boëlle-Le Corfec E; Cali A; Wang X; Frias J; Roussel R; Bolli GB*
Department of Medicine, University of Toronto, Toronto, Canada;
Klinikum Schwabing, Städtisches Klinikum München GmbH, Munich, Germany;
Sanofi, Paris, France;
Sanofi, Tokyo, Japan;
Sanofi, Beijing, China;
National Research Institute, Los Angeles, California, USA;
INSERM, UMR_S 1138, Centre de Recherche des Cordeliers, Paris, France;
Perugia University School of Medicine, Perugia, Italy.
BRIGHT was an open-label, randomised, parallel-group, 24-week study in insulin-naïve participants with uncontrolled T2DM, investigating efficacy and safety of Gla-300 and IDeg-100. Participants were randomised to Gla-300 or IDeg-100, titrated to a target fasting SMPG of 4.4–5.6 mmol/L. The primary objective (non-inferiority of Gla-300 vs IDeg-100 in HbA1c change from baseline to week 24) was met. Secondary endpoints, presented here, included change in variability of fasting and 24-h SMPG. Eight-point SMPG profiles were similar for both groups at week 24. Mean baseline coefficient of variation (CV) of ≥3 fasting SMPG measurements over 7 days was 13.73% and 14.63% for Gla-300 and IDeg-100, respectively. Change in fasting SMPG variability (SE) to week 24 was 1.49% (0.39) and 1.97% (0.39) for Gla-300 and IDeg-100 (least squares [LS] mean difference [95% CI] −0.48 [−1.49 to 0.53]). Mean baseline CVs for 8-point profiles (24-h SMPG) were 22.60% and 23.41% for Gla-300 and IDeg-100. Mean change in 24-h SMPG variability (SE) was 3.70% (0.59) and 3.95% (0.60) for Gla-300 and IDeg-100 at week 24 (LS mean difference −0.25 [−1.72 to 1.22]). In summary, Gla-300 and IDeg-100 had similar variability of fasting and 24-h SMPG over the 24-week treatment period in BRIGHT.
Supported by: Sanofi (NCT02738151)

Comparable glycaemic control and hypoglycaemia outcomes in adult patients with type 2 diabetes (T2D) initiating insulin glargine 300 U/mL (Gla-300) vs insulin degludec (IDeg) in real-world clinical practice: DELIVER Naïve D study *Nicholls C; Gupta R; Meron A; Wu J; Westerbacka J; Bosnyak Z*
Sanofi, Bridgewater, New Jersey, USA;
Accenture, Florham Park, New Jersey, USA;
Sanofi, Paris, France.
In this retrospective, observational study, electronic medical records from the Predictive Health Intelligence Environment database (IBM Explorys, US) were analysed (1/3/2015–31/3/2018) to compare real-world clinical outcomes in insulin-naïve adults with T2D initiating Gla-300 or IDeg. Before propensity score matching (PSM), 1277 patients initiating Gla-300 and 653 patients initiating IDeg were eligible. After PSM, baseline demographics and clinical characteristics were similar in matched groups (Gla-300, N=638; IDeg, N=638). Mean HbA1c reductions were similar between matched Gla-300 and IDeg groups (1.67% vs 1.58%, respectively; P=0.51), as was attainment of HbA1c target <7.0% (23.82% vs 27.43%; P=0.20) and <8.0% (55.02% vs 57.05%; P=0.63). At 6 months' fixed follow-up, adjusting for baseline hypoglycaemia as a covariate, the incidences of all hypoglycaemia (ICD 9/10 and/or plasma glucose ≤3.9 mmol/L; Gla-300: 10.34% vs IDeg: 11.13%; P=0.75) and hypoglycaemia associated with an inpatient/emergency department (ED) encounter (2.04% vs 2.51%; P=0.42) were similar. With variable follow-up, incidences of all hypoglycaemia (adjusted hazard ratio [aHR] 1.02; P=0.93) and inpatient/ED hypoglycaemia (aHR 0.84; P=0.67) were similar between the groups, as were event rates of all hypoglycaemia (rate ratio 0.88; P=0.33) and inpatient/ED hypoglycaemia (rate ratio 0.63; P=0.15). Discontinuation rates were similar in the Gla-300 and IDeg groups (29.15% vs 32.60%; aHR 0.86; P=0.14). This analysis shows that initiation of Gla-300 or IDeg resulted in similar improvements in glycaemic control, with comparable hypoglycaemia outcomes and discontinuation rates, in a real-world clinical setting in insulin-naïve adults with T2D, consistent with findings from a previous head-to-head randomised controlled trial.
Supported by: Sanofi

Driving improvements in inpatient diabetes care - keep your eye on the dashboard! *Higgins K; Atkins A; Oyayoyi D, Ball J University Hospitals of Leicester NHS Trust, Leicester, UK*

Background

In November 2017 the Care Quality Commission (CQC) issued a warning notice to our trust raising concerns around the safe use of insulin. A robust action plan was implemented across all clinical directorates focusing on supporting frontline non-specialist staff. Assurance measures to track progress and a robust governance process were needed.

Aim

To develop an Inpatient Diabetes Dashboard to be shared quarterly at Executive Quality Board and with frontline staff. Purpose - for assurance purposes, monitoring progress and to drive further change.

Method and Result

With senior sponsors (nursing /medical), business analyst, inpatient diabetes lead nurse, inpatient diabetes specialist pharmacist we agreed measures to be reported in the dashboard. It was important to recognise limitations in data collection methods and ensure process was sustainable. We chose a combination of capillary blood glucose (CBG) data (% CBG<3.0; % CBG>25.1), data collected via notes audit (medication errors) and datix incident reporting (National Inpatient Diabetes Harms audit). Compliance with Insulin safety training also reported. The dashboard was set up to report monthly from April 2018 and data is displayed on a single sheet in both tabular and graphical form.

Summary

The Leicester Inpatient Diabetes Dashboard provides a unique, visually appealing progress update which can be shared widely. It provides assurance within our organisation that we are addressing concerns raised by CQC, national audit or local incident reporting. Importantly it allows us to highlight where we need particular executive support to effect. The dashboard can be adapted for use within any acute trust.

Home Diabetic foot ulcer service: a safe and clinically effective model for managing patients with diabetic foot ulcers in the community *Wilson C J; Coggins C; Price L; Richards J; Ghaffar A Dorset County Hospital Foundation Trust.*

Aims:

In 2014-2015 the National Diabetes Foot Care Audit (NDFA) estimated that the cost of diabetic foot disease to the NHS in England is £1 billion per annum. We have introduced a service which aims to manage patients with diabetic foot ulcers in the community. This should result in financial gains and improved patient outcomes whilst in accordance with the national objective of managing patients in the community.

Our 'Acute Hospital at Home' (AHAH) service is managed by a multidisciplinary team including Medical Consultants, Junior Doctors, Microbiologists, Nurses, Physiotherapists and Healthcare assistants.

Method:

We have performed a retrospective analysis of 42 patients. 23 of these patients had their management aided by the AHAH service, whilst 19 patients were solely treated in the hospital inpatient environment.

Results:

The study shows that patients managed through AHAH had shorter length of inpatient stays: 5.6 days compared to 24.7. The cost of an AHAH bed is £100/day and an acute medical bed is £280/day which results in a saving of £3788 per patient per admission from our study. Equivalence has been proved in rates of amputation, readmissions and death. We know patient satisfaction is significantly better for those managed in the community.

Conclusion:

The results demonstrate clear benefits of managing patients with diabetic foot ulcers in the community. Not only clear cost advantages but also significantly improved patient satisfaction and clinical outcome. We believe that that the AHAH service is a safe and hugely valuable clinical service which could be widely applied across healthcare.

Referral rates of patients with diabetes to secondary care are determined by practice size and confidence in treatment, not by HbA1c level *Siah, QZ; Ubeysekara, NH; Daves, S; Wong, S; Dayan, C*
School of Medicine, Cardiff University, UHW Main Building, Heath Park, Cardiff, UK;
Centre of Diabetes and Endocrine Sciences, University Hospital of Wales, Cardiff, UK

Aims

To identify the factors affecting the referral rates of diabetic patients from primary care to secondary care.

Methods

A study was done based on 66 GP surgeries in the Cardiff and Vale University Health Board (population 515,581). HbA1c outcome data of GP surgeries were obtained from the QOF database published for 2018. Referral rates were obtained from the electronic referral database of Cardiff and Vale University Health Board over the same period. Confidence level on the treatment of diabetes among GPs was assessed as a sub-study done in nine GP surgeries in the same area by using a self-administered questionnaire. The relationship of adjusted referral rates with the GP practice size, HbA1c outcome and the confidence level was assessed.

Results

Average adjusted referral rates to the secondary care in one year was 4.23% and with a wide variation of 1.24% to 16.28%. Average percentage of diabetic patients with blood sugar <59 mmol/mol was 63.17% (range: 43.19% - 76.23%). The average confidence score of GPs in treating diabetes was 67% and ranged from 50% - 85% in the sub-study. Referral rate correlated inversely with confidence level and the practice size, but there was no correlation with the HbA1c outcome.

Conclusions

Referral rates of patients with diabetes to secondary care are determined by practice size and confidence level in treatment, not by HbA1c level. Further training in diabetes care for primary care teams is required to improve the appropriateness of referral to secondary care.

Reduction in systolic blood pressure (SBP) with semaglutide treatment is not due to weight loss (WL) alone: data from SUSTAIN 1 – 5 *Subramanian G (1), Bain SC (2), Davies M (3), Knop FK (4), Vrazic H (5), Skjøth TV (5), Lingvay I (6) (1) Novo Nordisk Ltd., Gatwick, UK; (2) Swansea University, Swansea, UK; (3) University of Leicester, Leicester, UK; (4) University of Copenhagen, Copenhagen, Denmark; (5) Novo Nordisk A/S, Søborg, Denmark; (6) University of Texas Southwestern, Dallas, TX, USA*

Semaglutide significantly reduces HbA1c, body weight (BW) and SBP. This post-hoc analysis investigates the contribution of WL to SBP reductions.

SUSTAIN 1–5 randomised 3918 patients with inadequately controlled type 2 diabetes for 30 or 56 weeks to once-weekly semaglutide 0.5 or 1.0 mg or comparator (sitagliptin, once-weekly exenatide, insulin glargine or placebo). Using a mediation analysis, reduction in SBP was categorised as WL-mediated (indirect) or WL-independent (direct effect of semaglutide). SBP reduction was also evaluated across weight-change categories.

Across SUSTAIN 1–5, mean SBP reductions ranged from –2.6 to –5.1 mmHg and –2.7 to –7.3 mmHg, with semaglutide 0.5 and 1.0 mg, respectively, vs –1.0 to –2.3 mmHg with comparators ($p<0.02$ vs comparator for all trials except SUSTAIN 1 [both doses] and SUSTAIN 5 [0.5 mg]). Mean BW changes ranged from –3.5 to –4.3 kg and –4.5 to –6.4 kg with semaglutide 0.5 and 1.0 mg, respectively, vs –1.9 to +1.2 kg with comparators ($p<0.0001$ vs all comparators). Across all trials, both WL-dependent and WL-independent mechanisms contributed to observed SBP reduction with semaglutide. Greater reductions in SBP with semaglutide vs comparators occurred across all weight-change categories (>4.0 kg, 0–4.0 kg, no WL/BW gain).

With semaglutide, greater WL was generally associated with greater SBP reductions. However, SBP reductions were driven by both WL-mediated and WL-independent mechanisms, suggesting that the SBP reduction observed with semaglutide is not explained by WL alone.

Aldosterone-renin ratio in screening for primary aldosteronism: clinical audit *Raheem, A A; Cafferkey, M Basildon University Hospital*

Aim:
To compare current practice in a district general hospital against clinical guidelines and to identify the causes of repeated testing.
Methods:
We searched laboratory database for all ARR performed over 14 months period from May 2016 to July 2017 in Basildon University hospital. We reviewed clinical records for indications of the test. We evaluated local practice against guidelines of the Endocrine Society in patients with hypertension and the European Society of Endocrinology in patients with adrenal nodules.
Results:
We found 109 ARR measurements of 93 patients. Sixty two percent of patients were females. The indication for the test was hypertension in 52%, of these 71% met criteria for investigation. Forty percent of the patients in this sample had the test because of adrenal nodule and 46% of them met criteria for screening. Overall, 59.1% met criteria for investigation. Three patients were diagnoses with PA, while three possible cases where still under investigation. All positive results were in patients who met criteria for screening. Interfering medications accounted for 33.3% of repeated tests.
Conclusion:
Aldosterone-renin ratio was not indicated in 40% of patient in this sample. Careful patient selection can cut down the numbers of unnecessary tests. Review of medications is necessary to avoid the need to repeat testing.

The Incidence and Risk Factors of New-onset Type 2 Diabetes Mellitus After Gestational Diabetes

Yamanouchi L; Lee B; Smith A; Basu A Department of Diabetes, Endocrinology and Lipid Metabolism, City Hospital, Birmingham, United Kingdom, B18 7QH;
The University of Birmingham, Edgbaston, Birmingham, United Kingdom, B15 2TT.

Objective: To investigate the incidence and risk factors of Type 2 diabetes after gestational diabetes mellitus (GDM).

Design and methods: 416 women with GDM delivered between 01/01/2004-31/12/2007. GDM was diagnosed on the basis of a 75 g oral glucose tolerance test between 24-34 weeks' gestation. The diagnosis of diabetes after delivery was based on three successive HbA1c values in the diabetic range (>48mmol/L). The follow-up period was 10 years after the last patient's delivery date. Kaplan-Meier estimates for different ethnic groups and BMI category were compared using the log-rank test.

Results: 33.2% of mothers developed diabetes over the follow-up period. The overall incidence was 16.9 (95%CI 14.02-20.34) per 100 person-years. There were no significant differences in the time taken to develop T2DM among the three ethnic groups (p=0.31). Using a Cox P-H model, hazard ratios for the development of diabetes were 1.0, 1.29 and 0.47 for Asian, Afro-Caribbean and Caucasian women respectively after correcting for maternal age and BMI; these difference were not statistically significant. Women with BMI >35kg/m2 were almost three times as likely to develop diabetes compared to women with BMI <24.9 kg/m2 (hazard ratio: 2.92), which was statistically significant (p=0.004).

Conclusions: Maternal ethnicity and maternal age did not to have an effect on development of diabetes; women with high BMI were at a greater risk. However, the development of diabetes in a third of the cohort implies that preventative measures should be put in place for such high-risk communities.