



Association of British Clinical Diabetologists

Association of British Clinical Diabetologists,
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ABSTRACTS OF POSTERS

POSTER 1

Audit of the Management of Diabetes Mellitus and Hyperglycaemia in Elective Surgical Patients.

Dr. CM Srinivasan (Foundation Year 2 in Chemical Pathology)

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AIMS – to review the current perioperative management of diabetic surgical patients.

METHODS – 50 subjects studied with an inclusion criteria of admission between 01/04/2006 and 30/04/2007, under general surgery or orthopaedics, day case or inpatient admission, and diagnosis of Type 1 or Type 2 Diabetes Mellitus. Single investigator (Dr CM Srinivasan).

RESULTS – In 76% of cases diabetes was classified incorrectly. Microvascular risk factors were assessed in 34% of cases. In ~50% of cases there was no documentation of either drug doses or timing. 34% of patient had a HbA1c recorded at pre-admission clinic. 14% of patients had hyperglycaemia (>12.2 mmol/L) pre-operatively with 22% of patients having no intraoperative blood sugar monitoring. 14–28% of patients had hyperglycaemia post-operatively. No patients had their intravenous insulin regimen revised, despite being indicated in 8 of 17 cases. Three patients had post-operative wound infections, in two of the three cases associated with post-operative hyperglycaemia. 10% of patients were referred to the hospital diabetes team, the majority being referred for pre-operative management advice.

CONCLUSIONS– In hospital management of diabetes is complex and requires a multidisciplinary approach. Correct classification of diabetes type should be made early with a thorough assessment of risk factors and the pharmacological regime. All patients should have an HbA1c taken at pre-admission clinic with capillary blood glucose monitoring in the preoperative, intraoperative and postoperative periods. The use of intravenous insulin should be reviewed at least daily with revision as appropriate. The study raises the question whether patients should be managed in a pre-admission joint diabetes–surgery clinic.

POSTER 2

Long-term Improvement in cardiovascular risk factor profile in high-risk patients with Type 2 diabetes (T2DM) and albuminuria – influence of a specialist cardiovascular diabetes clinic.

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AIMS: Assess improvement in cardiovascular risk factors in T2DM patients with albuminuria (urinary ACR >10mg/mmol) seen in dedicated nurse led cardiovascular diabetes clinic, and to evaluate the benefits at 2 years.

METHODS: Retrospective collection of data on patients who attended a specialized cardiovascular diabetes clinic led by a specialist nurse. Patients were provided individualized advice on exercise, diet, smoking cessation and a review of their medications for hypertension and dyslipidaemia, with up-titration to achieve targets. The cardiovascular risk factors assessed were BMI, Blood pressure, HBA1C, urinary Albumin creatinine ratio (ACR), Total cholesterol, HDL- and LDL-cholesterol, and Triglycerides.

RESULTS: 56 were seen in the cardiovascular diabetes clinic. Average age was 66.49(Range 47–86); 27 male; 29 female; 15 had preexisting ischaemic heart disease, 6 had previous stroke, at the time they were referred. The values at base line, 6 months and at 2 years were BMI 30.92(± 6.53), 31.37(±8.03), 32.04(±8.29) p value < 0.0001; Systolic blood pressure 156.46(±19.9), 143.25(±24.16), 135.28(±18.50) p value <0.0001; Diastolic blood pressure 83.43(±9.85), 80(±13.73), 78.96(±8.32) p value < 0.0001; Total cholesterol 4.53(±0.95), 4.88(±6.29), 3.9(±0.92) p value <0.0001; Triglycerides 1.68(±0.81), 1.58(±0.88), 1.38(±0.67) p value <0.0001; HDL 1.60(±0.63), 1.40(±0.41), 1.48(±0.42) p value < 0.0001; LDL 2.13(±0.85), 1.93(±0.73), 1.85(±0.86) p value <0.0001; ACR 28.06(±91.55), 14.86(±24.51), 19.43(±45.46) p value <0.0001; HBA1C 7.76(±1.33), 7.99(±1.40), 7.7(±1.70) p value <0.0001.

CONCLUSION: Our data demonstrates that a specialized cardiovascular diabetes clinic led by a dedicated specialist nurse individualized results in short- and long-term reduction in cardiovascular risk factors, with possible reduction in cardiovascular disease.

POSTER 3

Botulinum toxin injection of the pylorus as treatment for severe diabetic gastroparesis

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Symptomatic gastroparesis is a rare but debilitating complication of diabetes. Patients with this condition have recurrent hospital admissions and often have a very poor quality of life. Antiemetics and prokinetic drugs have unsatisfactory results. There is evidence that diabetic gastroparesis is associated with increased pylorospasm and injection of botulinum toxin into the pylorus of the stomach can be very effective. We report the case of a 38 year old man who had dramatic improvement after such treatment.

He has had type 1 diabetes for 25 years, complicated by peripheral neuropathy, retinopathy and end stage renal failure and has recently started dialysis. For the past 3 years he had been troubled by nausea, vomiting, loss of appetite and severe heartburn which had worsened in the last year. He had lost 17 kilograms in weight and had 8 hospital admissions in the last year, each lasting 2–3 weeks. His blood sugars were erratic and his HbA1c had been around 8% in the last year.

A gastroscopy was normal and radio isotope study confirmed delayed gastric emptying. Domperidone and amitriptyline were of no benefit. Following botulinum toxin injection he gained 7 kilograms over 8 weeks. His blood sugars went up requiring increase in insulin doses. He reports that the treatment has dramatically changed his life. He can now go out without fear of vomiting and has not been admitted to hospital since. Total symptom score went down from a maximum of 40 to 17 after botulinum injection on a Likert scale questionnaire.

POSTER 4

The effect of Grapeseed Extract upon oxidative stress in type 2 diabetes is attenuated in individuals with a diet high in flavanoids

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Background and aims:

Flavonoids have been shown to have beneficial effect on novel markers of vascular risk such as oxidative stress and insulin resistance. We aimed to test the hypothesis that grapeseed extract (GSE), a rich source of flavonoids may improve these markers in type 2 DM subjects at high cardiovascular risk and examined the impact of baseline dietary GSE intake upon these responses.

Methods:

32 T2DM patients, diet or tablet controlled, were given 600mg GSE and placebo, for 4 weeks each, in a double-blinded randomized crossover trial.

Novel risk factor Marker

Oxidative stress: GSH; GSH/GSSG

Insulin Resistance: HOMA-IR

Metabolic: Fructosamine

Results:

Dietary analysis revealed 7 individuals who had excess dietary flavonoid intake (DFE). The non-DFE group (n=25) showed, that GSE improved fructosamine levels ($281.64 \pm 38.34 \mu\text{mol/l}$ vs. $275.64 \pm 51.57 \mu\text{mol/l}$; $p=0.0185$, [pre vs. Post GSE]); GSH ($2337.11 \pm 866.9 \mu\text{M}$ vs. $3732.27 \pm 1111.2 \mu\text{M}$; $p<0.01$); glutathione ratio (13.32 ± 8.6 vs. 18.6 ± 10.2 ; $p=0.022$) and showed a trend towards improvement in HOMA-IR (2.07 ± 1 units vs. 1.89 ± 1.03 units; $p=0.0962$).

Analysis of the 7 individuals with DFE showed a similar response following GSE in fructosamine ($274.3 \pm 45.4 \mu\text{mol/l}$ vs. $263 \pm 47.2 \mu\text{mol/l}$ $p=0.0013$), GSH ($2457.2 \pm 285.3 \mu\text{M}$ vs. $3105.3 \pm 638 \mu\text{M}$ $p=0.016$ with attenuated response in, glutathione ratio (9.5 ± 5.4 vs. 13.9 ± 10 $p=0.39$) and HOMA-IR (1.75 ± 0.5 units vs. 1.73 ± 0.3 units $p=0.32$)

Conclusion:

Whilst GSE appears to improve oxidative stress in type 2 DM individuals, this benefit is attenuated in individuals with a diet already enriched with flavonoids. This is a novel phenomenon not reported elsewhere in the literature and warrants further research.

POSTER 5

Tolerability of Metformin SR in Patients with Type 2 Diabetes

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Objectives: To assess the tolerability of metformin SR in type 2 diabetes patients (T2DM) who were intolerable to immediate-release (IR) metformin gastrointestinal (GI) side effects.

Methods: All T2DM patients attending the diabetes clinic (between June 2005 and May 2007), who had the GI side-effects of IR metformin at a daily dose of 2,000 mg or less despite correct administration and cautious titration, were switched to metformin SR and followed prospectively for 6 months.

Results: 30 patients intolerant to standard IR metformin, with an average maximum tolerated dose of 829 mg, were assessed over a six month period following a switch to metformin SR. 29 patients (96%) tolerated the metformin SR with no reported GI side effects. The average maximum tolerated dose of metformin SR was 1568 mg. A significant decrease in mean HbA1c level (from 8.9% to 8.07%) was also observed at the end of the six-month period.

Conclusion: This prospective clinic-based evaluation showed that metformin SR is well tolerated in T2DM patients who are intolerant to IR metformin. This improvement in tolerability has the potential to improve patients' adherence to metformin based therapy and may enhance the treatment outcome.

POSTER 6

Reversibility of the endocrinopathy in Poems syndrome

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Case report: A 42-year-old lady was referred to the endocrine clinic with a five-month history of symptoms suggestive of hypothyroidism and a high TSH and low free T4 levels. Clinical examination revealed low systemic blood pressure, increased skin pigmentation, bilateral axillary lymphadenopathy and hepatosplenomegaly. Short synacthen test confirmed cortisol insufficiency and she was started on thyroxine and hydrocortisone, and went on to have further investigations for the lymphadenopathy and hepatosplenomegaly. Liver biopsy showed non-specific inflammatory changes, and trephine bone marrow biopsy showed findings suggestive of an underlying myeloproliferative process and no features of lymphoma

or leukaemia and a normal bone marrow cytogenetics. Despite initial improvement in symptoms, the patient deteriorated and developed symptoms suggestive of mild peripheral motor and sensory neuropathy and sclerodermatous skin changes. Free IgA-lambda light chains were detected in the urine specimen and an osteosclerotic focus was noted in the left pelvis. These features were diagnostic of POEMS syndrome. She had an autologous haematopoietic cell transplantation and chemotherapy. Four years later, she presented cushinoid features with weight gain over several months. Iatrogenic Cushing syndrome was suspected and hydrocortisone dose weaned off gradually over 2 months. Short synacthen test was then performed, which revealed normal adrenal function with a peak cortisol level of 641 nmol/L. Three months later at follow up, she was asymptomatic, off steroid treatment, with normal 9 am cortisol of 520 nmol/L (280–700).

Comment: POEMS Syndrome (Polyneuropathy, Organomegaly, Endocrinopathy, Monoclonal-gammopathy and Skin changes) is a rare condition with a prevalence of 1 in 2.7 million and considered to be an osteosclerotic variant of myeloma. Endocrinopathy, found in 84% of patients, is a central feature of POEMS syndrome. The cause of endocrinopathies in poems syndrome is unknown. The present case is the first report of spontaneous recovery of adrenal insufficiency in POEMS syndrome; it highlights the need for considering regular re-assessment of the endocrine function for potential recovery of the endocrinopathy.

POSTER 7

Audit of hospital admission due to hypoglycaemia in patients with diabetes

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Belinda Allan, Consultant in Diabetes and Endocrinology, Hull Royal Infirmary.

INTRODUCTION: Hypoglycaemia requiring NHS resource in people with diabetes is common. The cost of treating hypoglycaemia is estimated to exceed 13 million pounds annually in the UK.

AIM: To assess appropriateness of admission due to hypoglycaemia in people with diabetes and the frequency of referral to the inpatient diabetes specialist nurse (DSN) for advice.

METHOD: A six-month retrospective case-note review of diabetes patients admitted with hypoglycaemia to Hull Royal Infirmary via Accident and Emergency (A+E).

RESULTS: 35 patients were identified; 28.5% had type 1, 65.7% type 2 and 5.7% secondary diabetes. 68.5% of patients were insulin-treated and 31.4% treated with a

sulphonylurea alone or in combination with other oral agents. Five patients were inappropriately admitted. Excepting one, all arrived out-of-hours. More than 50% of patients admitted with hypoglycaemia were not referred to the DSN prior to discharge. 6 (17.1%) patients had recurring hypoglycaemia and had received no treatment adjustment despite prior attendance to A+E.

CONCLUSIONS: Inappropriate admission due to hypoglycaemia in patients with diabetes is estimated at 10 per year in our hospital. Education of medical teams on the importance of involving the DSN is essential to improving the service patients receive. Increasing referrals to the diabetes team will facilitate prompt patient education and appropriate treatment adjustment which may reduce hospital attendance with hypoglycaemia. Lack of DSN availability out-of-hours probably contributes to inappropriate admission. However, the small number of admissions with hypoglycaemia ascertained does not justify the cost of an on-call DSN service on the grounds of hypoglycaemia alone.

POSTER 8

HbA1c is a poor indicator of Glycaemic Control in Patients with Diabetes on Haemodialysis

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Background. Glycosylated haemoglobin (HbA1c) is the product of non-enzymatic-covalent addition of glucose to the haemoglobin molecule and is the gold standard measure of long-term glycaemic control. Recent literature has questioned its reliability in patients on haemodialysis (1,2). The continuous glucose monitoring system (CGMS) provides a technique to measure ambient glucose concentrations in subcutaneous interstitial fluid every 3 minutes by means of an implantable probe linked to a biosensor. The CGMS is therefore ideally suited to validate the reliability of the HbA1c measurement.

Aims. 1. To investigate the relationship between HbA1c and 48 hr glycaemic control in haemodialysed diabetic subjects. 2. To examine 48 hour glucose profiles including a day on and off dialysis.

Subjects and Methods. Using CGMS (GlucoDay S, Menarini Diagnostics) 48 hr glucose monitoring was performed in 13 (10 male) diabetic haemodialysis patients (mean

age 60 years). No subject had a haemoglobinopathy or had received a recent blood transfusion. Erythropoietin doses were 10–40 mcg per week and all subjects had stable haemoglobin. The CGMS was worn on the waist and recorded data every 3 minutes during a 24 hour period on and 24 hours off haemodialysis. Data was then downloaded to a computer for analysis. The current HbA1c value was assessed against the mean glucose values obtained from the CGMS data for each subject.

Results. 1. HbA1c greatly under estimated blood glucose values in 9/13 subjects. 2. Off-dialysis days showed greater glycaemic excursions 3. Hypoglycaemia post-dialysis, occurred in 9/13 subjects independent of the time of dialysis.

Conclusion. This study shows that HbA1c frequently under estimates glycaemic control in haemodialysed patients. The difference in glucose profiles on and off dialysis days suggests that hypoglycaemic management may need to be varied according to days of dialysis.

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POSTER 9

Diabetic Papillopathy: An uncommon presentation of bilateral optic disc swelling in the Acute Medicine Unit

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A 60 year old lady with type 2 diabetes was admitted with apparent bilateral papilloedema, detected by her optician. Her PMH was complicated by lupus and autoimmune hepatitis. She was diagnosed with type 2 diabetes in 1992 and treated with metformin, acarbose and gliclazide. Her initial clinical course was uncomplicated (HbA1c 6%, BP 140/80 mmHg, LDL Cholesterol 1.68 mmol/l). She subsequently developed stage 3 chronic kidney disease due to histologically proven diabetic nephropathy and lupus nephritis (eGFR 37 mmol/lml/1.73m², ACR 308.4 mg/mmol).

During her hospital admission raised intracranial pressure and a space occupying lesion were excluded by brain imaging and lumbar puncture with normal opening pressure. Visual acuity was initially 6/9 bilaterally, Goldmann perimetry showed an arcuate field defect and generalised constriction; arteritis was excluded by fluorescein angiography. A diagnosis of diabetic papillopathy was confirmed by the

ophthalmologists. Three months later her vision (6/6 bilaterally) and field defects have improved and signs of optic nerve swelling are resolving. During this period she was diagnosed with interstitial pulmonary fibrosis that was treated with oral prednisolone.

Comment: Diabetic papillopathy is an uncommon complication in diabetes that may be mistaken for papilloedema. This condition may present with minimal reduction in visual function and is believed to occur due to disruption to the peripapillary vasculature in patients with non-proliferative and proliferative diabetic retinopathy. While clinical signs resolved within the first year of largely conservative follow up in the largest series to date, progression of retinopathy requiring pan-retinal photocoagulation occurred in around 20%. In conclusion, diabetic papillopathy should be considered as a differential diagnosis of papilloedema in patients with diabetes presenting with apparent papilloedema, but only when raised intracranial pressure has been carefully excluded.

POSTER 10

Short Synacthen Tests in practice – Who and Why.

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Introduction

The most common test employed to make the diagnosis of glucocorticoid insufficiency is the short synacthen test (SST). We wanted to identify the clinical indications and outcomes of SST requested and performed by general physicians and endocrinologists in our district general hospital.

Method

We reviewed the pathology requests forms SST results and medical records of all patients who had a SST requested by a Physician in one year. Cortisol level of 550 nmol/L 30 or 60 minutes post 250mcg of parenteral synacthen was considered normal adrenal response.

Results

Of 27 SSTs done by endocrinology team hypocortisolism was identified in 9 cases (33.3%) . Glucocorticoid deficiency was found in only 5 (6.76%) patients out of 74 who had SST requested and supervised by general physicians. This is statistically significant with a chi-squared value of 11.72 which is greater than 0.1% point for the distribution with 1 degree of freedom, so that P-value is <0.001.

The commonest indication for the test was hyponatremia (25 cases). All those patients had normal adrenal reserve.

Conclusions

SSTs done by general physicians have a diagnostic yield significantly less than that performed and requested by endocrinologists. This would suggest that a more

rigorous clinical and biochemical assessment is required prior to dynamic investigations.

SST done solely to evaluate hyponatremia has poor diagnostic yield.

POSTER 11

A PLETHORA OF CHALLENGES FROM A MULTINODULAR GOITRE.

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A 67-year-old lady presented to her GP with thyrotoxic symptoms & biochemistry (May 2007 - fT3 7.5, fT4 17.5, TSH <0.02). Her background included radioactive iodine treated thyrotoxicosis (1968), rheumatoid arthritis, schizophrenia and obstructive airways disease. High dose carbimazole was commenced.

She then presented acutely with a feeling of being strangled on looking down with clinical signs of superior vena cava obstruction (SVCO). Carbimazole was stopped. CT showed a 7.5cm multinodular goitre with significant retrosternal and posterior mediastinal extension, compressing the trachea to 7mm, displacing and compressing the SVC.

Her SVCO improved with carbimazole withdrawal. She only accepted surgery when she subsequently developed recurrent thyrotoxicosis (Oct 2007 - fT3 11, fT4 33.9, TSH <0.01). Carbimazole 60mg and Lugol's iodine were started in hospital to induce euthyroidism just prior to surgery.

Tracheal compression and SVCO make intubation difficult and subsequent positive pressure ventilation can cause perioperative cerebral oedema. She therefore had an extra-corporeal internal jugular to femoral venous shunt under local anaesthetic before undergoing an awake fibre-optic intubation. Total thyroidectomy was then performed uneventfully using the cervical approach. After an uncomplicated extubation, she was fit for discharge 4 days later.

This case was challenging to all specialists involved. Notwithstanding her psychiatric & respiratory issues, her SVCO was reversibly related to hypothyroidism & she required induction of euthyroidism for surgery. Anaesthetic challenges were circumvented by a pre-emptive extra-corporeal shunt, decompressing the SVCO before her total thyroidectomy.

Normal Ranges:

fT3 3.5 - 6.5pmol/l, fT4 9.5 - 22pmol/l, TSH 0.3 - 5.5 mU/l

POSTER 12

An unusual presentation of hypoglycaemia

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Case Report: A 62 year old man presented to A + E after a severe hypoglycaemic episode. His wife woke up at 1.30 am as he fell forwards in the bed and treated him with glucagon as he was unresponsive and called the ambulance. He came round after half an hour and complained of pins and needles in his feet, pain in both his legs and severe weakness of his legs resulting in him not being able to stand.

On examination his GCS recovered to 15/15, bed-side glucose of 7 and systemic examination was largely unremarkable except for reduced power in proximal muscles of both lower limbs (5/5 upper limbs, 3/5 lower limbs) with sluggish tendon reflexes. Plantar reflexes, bladder & bowel functions and saddle sensation were normal. Differential diagnoses for muscle weakness of Guillian-Barre, Diabetic neuropathy, polymyositis etc were considered and investigated. His routine blood results were normal except for a raised Creatinine Kinase of 1326 units/litre. A registrar review noted he has a history of frequent hypos that year (7-8 times), and there was no seizure during this hypo.

His mobility improved with physiotherapy to standing with a frame and sitting in a chair, however, he was still unable to walk. An X ray of pelvis and hips was performed and bilateral intercapsular femoral fractures were found. He had bilateral hip replacements done with good result.

Discussion

Hypoglycaemia is defined as a blood glucose concentration of <3.0 mmol/L. The common symptoms of hypoglycaemia are commonly recognised to be tremors, palpitations, anxiety, sweating, hunger and paresthesia. However severe symptomatic hypoglycaemia can result in loss of consciousness, seizures, transient hemiplegia, strabismus etc. This unusual presentation of hypoglycaemia highlights the importance of simple lateral thinking which revealed a bilateral femoral fractures due to hyperflexion injury to the hip during severe hypoglycaemia.

POSTER 13

Reflection: a benchmark for future audits of counselling services for people with diabetes

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Psychological support services for people with diabetes are in short supply. Standards 3 and 5 in the 1999 diabetes NSF addressed this issue yet the 2000 ABCD 'Survey of Consultant Diabetologist-Led Services' reported < 50% of diabetes units with access to psychology services. The Diabetes UK Professional Advisory Council recommended psychological well-being be assessed annually and initiatives such as psychological support services not delivered by psychologists be explored.

Reflection is the Humanistic counselling service for people with diabetes attending the Nottingham University Hospitals Trust. Begun in 2005 five counsellors now provide fifteen weekly sessions of therapy. Reflection is advertised within the diabetes centre via consultations, education packs, our intensive T1 diabetes education course and the web-based Diabetes Directory of Services accessible to primary care. To date 69 people (clinic population 3,000) have sought counselling. Pre and post therapy HbA1c values (34 clients) and the client scores from four questionnaires:

PAIDS(19) diabetes-related distress, HADS(10) depression/anxiety, W-BQ12(23) well-being and ADDQoL(22) impact of diabetes on quality of life have been compared (Wilcoxon rank test). HbA1c values did not change significantly with therapy. Significant differences, $p < 0.002$, were demonstrated in the PAIDS (m 46 v 31), W-BQ12 (m 11 v 19) and ADDQoL (m -3.0 v -2.4). HADS depression scores also improved (m 9.4 v 6.5), $p < 0.04$.

Conclusion: Reflection is an important addition to the service portfolio provided to people with diabetes in Nottingham, improving well-being and reducing both diabetes-related distress and the negative impact of diabetes on quality of life.