Materials and methods
We studied 138 T2D patients with insulin in therapy (31 men and 107 women; mean age 51.43 + 8.41 yrs; disease duration 6.40 + 2.01 yrs; BMI 31.15 ± 1.99 kg/m^2; HbA1c was 8.05 + 0.95%; total daily dose (TDD) of insulin – 0.74 + 0.12 U; duration of insulin using - 3.86 + 0.87 yrs) and 32 matched for age and body mass index controls. The research involved anthropometry, general clinic examination, dual energy X-ray absorptiometry performed on "PRODIGY LUNAR" using program "Total body" and "Body composition".
Results
There were no significant differences in fat component in general group of T2D patients and controls: Total Body 39.10 ± 7.70% vs 36.88 ± 7.84%, $P = 0.057$; Android: 45.35 ± 8.06% vs 44.34 ± 7.15%, $P = 0.393$; A/G Ratio: 1.12 ± 0.19 vs 1.16 ± 0.25, $P < 0.05$; Trunk/Total: 0.58 ± 0.07 vs 0.56 ± 0.07, $P = 0.070$. But in the subgroups of women (T2D vs controls) the following features were established: Total Body 40.75 ± 6.63% vs 41.81 ± 5.34%, $P = 0.384$; Android: 46.38 ± 7.71% vs 46.56 ± 7.28%, $P = 0.898$; Gynoid,%: 43.14 ± 6.95% vs 46.10 ± 5.32%, $P = 0.021$; A/G Ratio: 1.08 ± 0.15 vs 1.02 ± 0.16, $P = 0.033$; Trunk/Total: 0.57 ± 0.07 vs 0.53 ± 0.06, $P = 0.001$; (Arms + Legs)/Total 0.72 ± 0.23 vs 0.87 ± 0.24, $P = 0.001$; Legs/Total: 0.29 ± 0.07 vs 0.33 ± 0.07, $P = 0.001$. Increasing A/G Ratio, Trunk/Total and decreasing (Arms + Legs)/Total, Legs/Total in diabetic patients evidence of fat redistribution in the trunk towards the extremities. Android (central) fat distribution was positively correlated with the age of T2DM women ($r = 0.18$; $P = 0.023$), however no correlation was found with the duration of the disease, level HbA1c, the TDD insulin dose. Similar differences were not found in the subgroups of men (T2D vs controls) in the following parameters: Total Body ($P = 0.271$), Android, % ($P = 0.906$), Gynoid, % ($P = 0.280$), A/GRatio ($P = 0.146$), Trunk/Total ($P = 0.974$), (Arms + Legs)/ Total ($P = 0.095$); Legs/Total ($P = 0.976$).
Conclusions
There are differences in the distribution of fat in men of women with type 2 diabetes getting insulin. Women are characterized by a redistribution of fats with an increase in sediment in the trunk region.

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EP38

Hyperglycemia and thyroid disorders in chronic hepatitis C virus infected patients in Fayoum, Egypt

Mohamed Mashahit & Tarek Ibrahim
Department of internal medicine, faculty of medicine, Fayoum University.

Background
Hepatitis C virus is common in Egypt and its prevalence varies from 10 to 17%. Beside its harmful effect on the liver, it can lead to variable other effects on various organs and tissues known as the extrahepatic manifestations of HCV. hepatitis C virus induced thyroid diseases in the form of thyroiditis resulting in hypofunction or even hyperfunction of the gland. thyroid disease was found to be of immune nature. Also diabetes which is often termed hepatogenous diabetes was common in patients with chronic HCV and this form of diabetes differs from the classic type 2 diabetes as the patient are usually non obese but have insulin resistance and also the absence of family history of diabetes. interestingly and GAD and anti islet cell antibodies were found in some chronic HCV diabetic patients. The aim of this work is to study the prevalence of hyperglycemia and thyroid disorders in chronic HCV patients.
Patients and methods
This observational cross sectional study included 1400 chronic HCV patients referred to Fayom University hospital, Fayoum general hospital as well as Fayoum insurance hospital for HCV treatment according to the national Egyptian HCV treatment program.
Results
In this study it was found that 90% of the patients had insulin resistance measured by HOMA-IR , 24% had hyperglycemia (16% T2DM, 8% IGT) and 21% had thyroid diseases (hypothyroidism in 13%, hyperthyroidism in 6% and goiter only with normal function in 2% of the studied population)
Conclusion
Hyperglycemia and thyroid diseases are very common in chronic HCV patients and are linked to the extra-hepatic manifestations of HCV

Keywords: HCV, Hyperglycemia, Diabetes, Thyroid, Insulin Resistance
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EP39

The prevalence of risk factors for type 2 diabetes among workers of the industrial enterprisein Minsk with FINDRISK questionnaire

Svetlana Sehen', Natalia Karlovich, Tatyana Mokhort & Olga Shishko
Belarusian State Medical University, Minsk, Belarus.

Introduction
Type 2 diabetes (T2D) and obesity are currently among the most common non-communicable diseases in the world. According to IDF experts in 2015, 415 million people suffered from diabetes, more than 90% of them are in T2D, and half of the disease is hidden and not timely diagnosed.
Aim
To determine risk factors and ten-year T2D risk with FINDRISK questionnare.
Materials and methods
We included 566 people who were proposed to write in FINDRISK questionnaire. We measured height, weight, waist circumference (WC), body mass index (BMI) and blood glucose which was measured by rapid test method. Patients with history of diabetes were excluded. Results are presented as M ± SE, differences were statistically significant at $P < 0.05$.
Results
The study included 310 men aged 48.11 ± 16.35 years, and 256 women aged 48.91 ± 14.53 years. The average age of participants in the action was 44.26 ± 12.62 years, BMI 25.09 ± 3.16 kg/m^2 and blood glucose 5.02 ± 0.42 mmol/l. 46.9% of participants were at low risk for T2D, men (63.7%) were twice as much as women (35.2%) ($P < 0.05$). A low risk of developing CD2 is characteristic of young and middle-aged patients (44.26 ± 12.62 years), height 171.65 ± 8.07 cm, weight 74.19 ± 10.73 kg, with normal or overweight (BMI 25.09 ± 3.16 kg/m^2), WC 83.35 ± 7.89 cm and normal blood glucose 5.02 ± 0.42 mmol/l. 6.2% were registered as patients with high risk, men (44.4%) were a slightly less than women (55.6%). The average age was 55.94 ± 5.61 years, BMI 31,66 ± 2,55 kg/m^2, WC 100,72 ± 8,39 cm, blood glucose 5.43 ± 0.46 mmol/l. According to the results of the study very high risk group of the patients was not identified. In the older age group (over 45 years) the proportion of patients at high risk is significantly more prevalent over the proportion of patients under the age of 45 years with the same risk ($R < 0.001$). Hyperglycemia was detected in 43 participants (7.6%) that was mostly in respondents with increased risk for T2D. During the course of correlation analysis it was found that the age of the respondent ($R = 0.25$), WC ($R = 0.24$), BMI ($R = 0.22$), hyperglycemia anamnesis ($R = 0.21$), arterial hypertension ($R = 0.20$) have the greatest impact on the detection of hyperglycemia.

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EP40

Vitamin D status in a population of type 1 diabetics

Fatima Zahra Zaher, Ghizlane Elmghari & Nawal Elansari
Department of Endocrinology, Diabetes, Metabolic Diseases and Nutrition, Mohammed VI University Hospital, Marrakech, Morocco.

Introduction
Vitamin D deficiency is a health problem related to cardiovascular diseases, autoimmune diseases and cancers. Several studies have shown a significant prevalence of vitamin D deficiency in T1D with positive impact of supplementation on glycemic control. The objective of our work is to evaluate vitamin D status in our T1D patients
Patients and methods
Our study has included 35 patients followed for T1D, vitamin D status was ordered in all patients.
Results
The mean age of patients was 22.5 years, the sex ratio was 1.35 with female predominance. The average duration of diabetes progression was 8.8 years with extremes ranging from 0 to 26 years. The average insulin requirement was 0.85 IU/ kg/day. HbA1C was performed in 54% of our patients and showed poor glycemic control in 88% of cases. Vitamin D levels were within the normal range in 10%, insufficient in 15% and deficient in 75%.
Discussion
Vitamin D deficiency is widely prevalent in T1D, it's able to induce pancreatic islets inflammation inducing an alteration of insulin secretion as well as insulin sensitivity and associated with poor glycemic control. Moreover, it appears that vitamin D has an effect on carbohydrate homeostasis, directly on cell B, and indirectly by regulating calcium levels since insulin secretion is calcium-dependent

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in our population. And evaluate the association of these polymorphisms with bone mineral density and fracture.
Design, Patients, and Setting
We performed an observational prospective study in pre- and postmenopausal ambulatory women ($n=72$ and $n=152$, respectively).
Intervention
Blood samples were collected at baseline to the measurement of polymorphisms. Women filled out a questionnaire and underwent bone mineral density measurement using dual-energy x-ray absorptiometry at the time of enrollment. We evaluate the incidence of fragility fracture after 1 year of follow-up
Results
The prevalence of the polymorphisms in our population was: *Gen COL1A1SP1*:59% SS, 20% Ss, 21% ss; *Gen CTRALUI*: 5% AA, 41% Aa, 54% aa; *Gen ESR1PPVUII*: 36%PP, 35% Pp, 29% pp; *Gen ESR1XXBAI*: 10%XX, 48% Xx, 42% xx; *Gen VDRBBSMI*: 11% BB 44% Bb, 45% bb; *Gen VDRFFOKI*: 40%FF, 45% Ff, 15% ff. No polymorphisms were associated with low bone mineral density ($P>0.05$). Only an association was found in the postmenopausal group between the polymorphism of the PolESRXX gene and the presence of osteoporotic fracture after menopause ($P=0.02$).
Conclusions
The osteoporosis is a complex and multifactorial disease. Our data don't find any significant association between polymorphisms and bone mineral density. The prevalence of genotyped polymorphisms in our study is consistent with others described in the European population (except for the polymorphism of the COL1A1gene)

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Diabetes, Obesity and Metabolism

EP35

Do our diabetic patients really manage to recognize hypoglycaemia and to act properly in front of it?

Chaima Jemai, Nadia Bn Amor, Amal Smida, Nadia Khessairi, Mariem Zarrouk, Aroua Temessek, Tertek Hajer & Faika Ben Mami
Institut National D Nutrition De Tunis, Tunis, Tunisia.

Introduction
Therapeutic education is very important in any patient with a chronic disease such as diabetes. The objective of our study is to evaluate the knowledge of diabetic patients already educated about hypoglycemia.
Materials and methods
This is a prospective study conducted on 50 diabetic patients hospitalized for equilibration of their diabetes in the "C" service of the Tunis National Institute of Nutrition and who were educated beforehand on hypoglycaemia. These patients' knowledge of the defining value of hypoglycaemia and severe hypoglycaemia, signs of hypoglycemia, and their behavior were assessed if they experience hypoglycaemic discomfort.
Results
The mean age of the patients was $68.6+/-11.2$ years. The average body mass index (BMI) was $37.9+/-3.3$ kg/m^2. Diabetes was insulin-dependent in 100% of cases that had been on the move for $16.8+/-8.3$ years on average. Diabetes was poorly balanced in all patients with mean HbA1C of $9.2\%+/-1.1$. Only 30% of patients had a glucometer and regularly monitored their blood glucose. Hypoglycemia was defined by the majority of patients (78%) as having a blood glucose level below 1 g/l. severe hypoglycaemia was defined as glucose lower than 0.5g/L by 86% of patients. The signs of hypoglycemia mentioned by patients are in order of frequency: hunger (100%), palpitations (100%), cold sweats (100%), tremors (96%), neuropsychic disorders (86%) and coma and death (52%) 86% of patients say that clinical signs are a function of the severity of hypoglycaemia.38% only know that if hypoglycaemia recurs, they may not be felt anymore.84% do not know that severe or repeated hypoglycaemia can cause neurologic sequelae. 80% reshape at the slightest malaise without confirming that it is hypoglycemia, even those with a glucometer. They ate bread (37.5%), fruit (30%), a dairy product (25%), chocolate (22.5%) and only 10% re-vegetated properly after confirmation of hypoglycaemia.
Conclusion
The fact of transmitting only information to diabetic patients is not enough to educate them. Therapeutic education must be well structured and patient centered to benefit it.

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EP36

Primary mitochondrial disorders and diabetes mellitus – two case reports

Lúcia Fadiga[1], Joana Saraiva[1,2], Diana Oliveira[1], Adriana Lages[1], Mara Ventura[1], Nelson Cunha[1], Diana Catarino[1], Joana Guiomar[1], Diana Silva[1], Carolina Moreno[1,2] & Francisco Carrilho[1]
[1]Endocrinology Department, Coimbra Hospital and Universitary Centre, Coimbra, Portugal; [2]Faculty of Medicine of the University of Coimbra, Coimbra, Portugal.

Introduction
Primary mitochondrial disease is a heterogeneous group of disorders of mitochondrial energy metabolism. Neuromuscular symptoms are the main features, but diabetes mellitus (DM) is present in many patients. DM is related to a deficient energy production, which leads to decreased insulin secretion and ultimately to β-cell apoptosis. In most cases, DM has an insidious onset with requirement of insulin 2-4 years after diagnosis. About 20% of cases present with acute symptoms. We present two cases of patients with mitochondrial disorders, who developed DM.
Case 1
36-year-old male, with mitochondrial encephalomyopathy, lactic acidosis, and stroke like episodes syndrome (MELAS) diagnosed at the age of 29, carrier of mtDNA mutation A3243G, with grade 4 tetraparesis, bilateral ptosis, cognitive impairment and epilepsy. He was under carbamazepine, valproic acid, idebenone, mirtazapine, riboflavin and a multivitamin supplement. He was admitted at the emergency department with symptoms of polyuria, polydipsia, dizziness and prostration. Blood tests revealed hyperosmolar hyperglycaemic syndrome, with venous glycaemia 989 mg/dL, plasma osmolality 325 mOsm/Kg, sodium 153 mmol/L, creatinine 1.1 mg/dL, normal pH and negative ketones. He started intravenous insulin and was admitted to the ward. He weighed 40Kg, with BMI 14.8Kg/m^2. Complementary investigation showed A1C 14.9%, C-peptide 0.1 ng/mL (1.0–7.6) and negative islet autoantibodies. He had improvement of clinical status and was discharged home with intensive insulin therapy, with total daily dose of 32U.
Case 2
52-year-old female, with mitochondrial myopathy with Kearns-Sayre phenotype, with grade 4 tetraparesis, bilateral ptosis, external ophthalmoplegia, atrioventricular block (with pacemaker) and chronic respiratory failure. She had past history of papillary thyroid carcinoma (total thyroidectomy at the age of 46), DM diagnosed at the age of 48, hypertension, dyslipidaemia and depression. She was under metformin plus sitagliptin, levothyroxine, telmisartan plus hydrochlorothiazide, bisoprolol, omeprazole, fenofibrate, fluoxetine and valproic acid. She was admitted at Endocrinology department due to uncontrolled diabetes, to start insulin. She weighed 51Kg, with BMI 21.8Kg/m^2. Complementary investigation revealed A1C 10.7%, C-peptide 1.4ng/mL (1.0–7.6) and negative islet autoantibodies. Metformin was suspended due to hyperlactacidaemia and insulin glargine was started. She was discharged home with glargine 18U and sitagliptin 100 mg.
Conclusion
These cases show the heterogeneity of DM in mitochondrial disorders. Differential diagnosis with other forms of DM is challenging, because mitochondrial disorders are rare and present with very different phenotypes. DM treatment at initial stages, before insulin deficiency, is controversial.

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EP37

Features of distribution of fat component in patients with type 2 diabetes mellitus giving insulin

Yuliya Dydyshka[1], Alla Shepelkevich[1] & Lobashova Veronica[2]
[1]Belarusian State Medical University, Minsk, Belarus; [2]Republic Center of Medical Rehabilitation, Minsk, Belarus.

Background
The central distribution of body fat has been identified as a significant risk factor for development of macrovascular complications in type 2 diabetes mellitus (T2D) in particular. The aim of the study was the features of fat mass distribution in T2D patients using insulin.

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