

8th International Conference on Endocrinology, Diabetes and Metabolism

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Scientific Tracks & Abstracts



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Session Chair: Wei Wang

First Affiliated Hospital of Baotou Medical Collage, China

Session Introduction

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Title: Role of chemotactic chemokine CXCL16, ADAM10 and ADAM17 in T-cells recruitment to the pancreatic B-cells and initiation of Type 1 diabetes mellitus in Mice: Modulatory action of Simvastatin

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Title: Diabetes and Child Obesity - Case presentation

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Forensic Aspects of Hypoglycaemia – 3

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Purkinje cells are specialized brain cells. There are no Purkinje cells in our legs and feet. Sensory nerves are at higher risk of damage in people with Diabetes leading to diabetic neuropathy. Patients lose sensation in their lower extremities making them vulnerable to injury and they don't feel the pain. That can lead to severe damage and because of high blood glucose, wounds get difficult to heal. Gas and gangrene develop and this leads to the only resort being amputation and life change challenges.

Diet, lifestyle, mental health and clinical treatment of Diabetes and Thyroid Disease, including Addison's Disease, plays an important role in patient welfare. Tragically many patients die young or go through life suffering from the old Victorian Stigma of being tainted by having to treat an incurable illness. This is not a joke as suggested in September 2006 in ignorance by a Hertfordshire Insurance Broker describing Diabetes with Neuroglycopenia as a Joke and Nonsense causing Obstructed Justice in Law of a critical life-threatening complication of Diabetes and Endocrinology Disease. A patient requiring a clinician to prescribe Insulin justifies clinical respect and understanding in English Law which has been misunderstood since 1994 with sad consequences in the investigation.

Today in recovering and managing the Covid-19 Pandemic of 2020 we move forward with new welfare ideas. It is a delight to be able to share some latest work with you for future research based on 44 years of T1D experience.

Recent Publications:

1. Diabetes and Covid-19 Pandemic - A T1 Patient Perspective – Derek C Beatty ISSN 2639-8109
2. Forensic Aspects of Hypoglycaemia doi: 10.35248/2155- 6156.20.11.e103.

Biography

Derek Beatty gained his BSc in biological science & business studies, from Edinburgh University, in 1972 and his diploma in marketing, from slough college, in 1977. He is a Director of Aston Clinton scientific Ltd since 1997 supplying respiratory nebulizers and specializing in diabetes. He is a healthcare consultant. He recently founded Mobile Med Tech Ltd to offer a mobile Diabetes service in Scotland involving NHS Scotland with experience in the team launching Europe's first mobile MRI Service in 1990. He has had T1D for 42 years and overcome diabetic retinopathy.

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A novel pathogenic variant of ARMC5 in a patient with primary bilateral macronodular adrenal hyperplasia: A case report

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Background: Primary bilateral macronodular adrenal hyperplasia (PBMAH), also known as adrenocorticotrophic hormone (ACTH)-independent macronodular adrenal hyperplasia, is a rare cause of endogenous Cushing's syndrome. In many familial cases of PBMAH, the variants in armadillo repeat containing 5 (ARMC5) gene are found to be associated with the disease. Here, we report a case of PBMAH harboring a novel frameshift variant in ARMC5 gene, which has not been previously reported in the literature.

Case presentation: A 67-year-old woman was referred due to the clinical features of Cushing's syndrome. Radiological imaging and hormonal testing were carried out. The serum levels of cortisol were remarkably increased at late night and did not suppress even after 1 mg of dexamethasone administration, while the plasma levels of ACTH hormone were decreased significantly. The patient underwent unilateral left-sided laparoscopic adrenalectomy, and the diagnosis of PBMAH was substantiated by histopathological analysis. Moreover, the partial envelope was incomplete and the cell proliferation index was low. Specifically, inhibin α -subunit (+), syn focal (+), Ki-67~3% (+), CgA (-) and CEA (-) were observed. DNA sequencing data revealed that a novel frameshift variant (c.363_373delGCCAGTGC GCC, p.Pro122Alafs*61) was identified in ARMC5 gene. However, this variant was not detected in the daughter of the patient. The rest of the family members, including her sister, son and two brothers, were not consented for genetic testing.

Conclusions: Early detection of ARMC5 variant status and familial screening might have important clinical implications for the diagnosis and prognosis of PBMAH patients. A novel ARMC5 frameshift variant (c.363_373delGCCAGTGC GCC, p.Pro122Alafs*61) was identified to be associated with the pathogenesis of PBMAH. ARMC5 sequencing may improve the identification of a causative gene variant for PBMAH and allow earlier diagnosis of this disease.

Keywords: Cushing's syndrome, ACTH-independent macronodular adrenal hyperplasia, Primary bilateral macronodular adrenal hyperplasia, ARMC5, Variant, Case report.

Recent Publications:

1. Wang W, Wei F. A novel pathogenic variant of ARMC5 in a patient with primary bilateral macronodular adrenal hyperplasia: a case report. *BMC Endocr Disord.* 2022 Aug 22;22(1):211. doi: 10.1186/s12902-022-01128-x. PMID: 35996143; PMCID: PMC9396781.
2. Wang W, Wei F, Li RH, Tian JH. A case report of idiopathic hyperaldosteronism characterized by bilateral adrenal adenoma. *Medicine* 2019;98:43(e17418).

Biography

Wei Wang, Chief physician, with master's degree, MD candidate, master's degree supervisor. International clinical bone mineral density evaluator, and ICSD lecturer, mainly engaged in research on endocrine and metabolic diseases; She presided over and participated in many clinical scientific research teaching work and published academic papers. Familiar with the standardized diagnosis and treatment of various common endocrine and metabolic diseases. In 2019, she studied in the Clinical Medical Center for Endocrine and Metabolic Diseases, Ruijin Hospital Affiliated to Shanghai Jiaotong University, majoring in obesity and weight loss as well as the diagnosis and treatment of difficult and rare pituitary-adrenal diseases.

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Metformin - “une pierre deux coups”: Metabolic modelling for Diabetes and Cancer treatment

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Metformin is a double-edged therapeutic candidate for the treatment of metabolic diseases like diabetes and cancer. This is due to its antihyperglycemic and apoptic chemical properties making metformin an ideal drug proposed by WHO. It is widely known that the underlying mechanism of action of metformin is mainly governed by the energy-sensor AMPK which play key roles in regulating on one side the glucose intake in cells and on the other side controlling cell death. To better understand the metabolic role of metformin, we first built a mathematical model of energy metabolism in normal cell to simulate energy and biomass production. We then extended the model by incorporating metformin as a new variable to interact with the primary variables of central carbon metabolism including glycolysis, the TCA cycle and the oxidative phosphorylation phase. Due to the complex nature of carbon metabolism, we prefer a coarse-grained approach by minimising the intricate interactions of few hundred variables. We investigate the effect of this new variable in energy generation as well as biomass production both central to diabetes and cancer. The results observed supports the evidence of the influence of metformin (in combination with other precursors) in overall metabolic cycle and fine tuning the logical level of metformin allows us to mimic different cellular conditions. In this way, testing a combination of other drugs having the same potential as metformin could become straight forward solutions in the fight against diabetes and cancer, which are life-threatening diseases on the global scale. The proposed model could be used as a blueprint for plugging other biological models including the cell cycle and the circadian rhythm. This could enable the investigation of more complex scenarios like chronotherapy important for precision medicine.

References

1. Book chapter -An Ockham Razor model of energy metabolism; advances in Systems and Synthetic Biology aSSB 2017
2. Regulation of Eukaryote Metabolism: An Abstract Model Explaining the Warburg/Crabtree Effect; Processes 2021,9,1496. [hHps://doi.org/ 10.3390/pr9091496](https://doi.org/10.3390/pr9091496)
3. Design of an AMR Using Image Processing and Deep Learning for Monitoring Safety Aspects in Warehouse; Pooloo, N.; Aumeer, W; Khoodeeram, R.; 2022 IST-Africa Conference
4. Real Time Flood Monitoring and Prevention Using IoT Sensors in Developing Countries; 2021 IST-Africa Conference
5. Monitoring Coral Reefs Death Causes with Artificial Intelligence; 2021 IST-Africa Conference (IST-Africa).

Biography

Rajeev Khoodeeram is a Senior lecturer at the Université des Mascareignes and occupies also the post of Head of department (Emerging Technologies) as well as Head of Campus. His first degree is in Computer science and later he did a Master degree in the field of electrical and electronic engineering, and landed with a PhD in Bioinformatics from Université Côte D'Azur, France. His expertise is in the field of modelling complex systems (environmental and biological). He also shows (and teaches as well) interest in the field of Artificial Intelligence (ML and DL) and Internet of things (environmental and biological). Prior to joining the academic world, he has gained some industrial experience and has continued to help some startups as a freelancer. Khoodeeram is currently piloting an MSc in Industrial Internet of Things for the manufacturing sector in Mauritius.

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The study of Metformin Glycinate as a new treatment option in Mexican populations; *In vitro* and *In vivo* experience

Jorge González-Canudas, Yulia Romero-Antonio, Marcela Arguedas-Núñez, José G Sander-Padilla, Alberto Martínez-Muñoz, Laura A Lugo-Sánchez, Ileana C Rodríguez-Vázquez, Alexei F Licea-Navarro and Lourdes Garza-Ocañas

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Metformin Glycinate (MG), it's a new molecule derived from Metformin, which has recently been studied and compared with reference therapy and shown to have a similar antihyperglycemic effect and a better bioavailability, absorption and safety profile. (1-3) Laboratorios Silanes has developed a new salt: MG, which has been tested in experimental animals and studies carried out in healthy volunteers and in patients with type 2 diabetes, including patients infected with SARS-CoV2. We present the findings of these studies. The results from the *in vitro* study demonstrated the effective inhibition of viral replication 48 hours after starting treatment with MG, without reports of any cytotoxic effect even with high doses. These results were confirmed by our clinical study, where patients with diabetes infected by SARS-CoV2, showed a lower oxygen requirement compared to control patients, due to a significant reduction in viral load just after 3.3 days of treatment. In order to demonstrate the oral bioavailability of MG compared to MH, a clinical study was carried out in healthy subjects under fasting conditions, observing a different pharmacokinetic profile for MG vs MH with a greater rate and degree of absorption for MG. A phase II clinical study was carried out, with the objective of determining the pharmacokinetic profile in an elderly population with T2DM (Type 2 Diabetes Mellitus), in order to know its effect in special populations. In this study, an adequate pharmacokinetic profile and safety of MG in elderly patients was confirmed, as there were no adverse events related to MG. This line of research continues, with the purpose of positioning MG as an innovative treatment which efficacy and safety have been proven through several studies.

Recent publications:

1. National Library of Medicine (U.S.). 2018. Metformin Glycinate on Metabolic Control and Inflammatory Mediators in Type 2 Diabetes (COMET). Identifier NCT01386671.
2. J. González-Canudas, Comet Group, 146-LB: Efficacy and Safety of Metformin Glycinate vs. Metformin Hydrochloride in Metabolic Control and Inflammatory Mediators in Type 2 Diabetes Mellitus Patients (T2DM), ADA (2019) 68.
3. Ventura-López C, Cervantes-Luevano K, Aguirre-Sánchez JS, Flores-Caballero JC, Alvarez-Delgado C, Bernaldez-Sarabia J, Sánchez-Campos N, Lugo-Sánchez LA, Rodríguez-Vázquez IC, Sander-Padilla JG, Romero-Antonio Y, Arguedas-Núñez MM, González-Canudas J, Licea-Navarro AF. Treatment with metformin glycinate reduces SARS-CoV-2 viral load: An *in vitro* model and randomized, double-blind, Phase IIb clinical trial. Biomed Pharmacother. 2022 Aug;152:113223.

Biography

Jorge Alejandro González Canudas is currently working as medical and clinical research director at Laboratorios Silanes, S.A. De C.V. in Mexico. He participated in research projects through public and/or private calls on the Development of a new molecule for the treatment of type 2 diabetes, Development of new combinations of drugs and supplements for a more effective and safe treatment for metabolic syndrome. He is the author of over 30 articles related to infectious diseases, microbiology, diabetes and cardiovascular and metabolic diseases. As well as author in various books, consensus and book chapters related to these topics.

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Role of chemotactic chemokine CXCL16, ADAM10 and ADAM17 in T-cells recruitment to the pancreatic B-cells and initiation of Type 1 diabetes mellitus in Mice: Modulatory action of Simvastatin

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T cell mediates immune response in type 1 diabetes mellitus (T1DM) through its trafficking into pancreatic islets. The role of A Disintegrin And Metalloproteinase 10 (ADAM10) and 17 (ADAM17) in pancreatic T-cells recruitment into the pancreatic islets during T1DM is not known. This study aimed to investigate the role of ADAM10 and ADAM17 in T1DM development and possible protective role of simvastatin (SIM) in STZ-induced T1DM. Balb/c mice were classified into 4 groups, 10 each. Diabetic group; received STZ (55 mg/kg, i.p.) for 5 consecutive days. Control group received buffer while SIM group received 50 mg/kg, i.p daily for 12 days. SIM + STZ group; received SIM (30 mg/kg, i.p.) daily for 12 days and STZ (55 mg/kg, i.p.) for 5 consecutive days. Biochemical, inflammatory and apoptotic markers as well as pancreatic CXCL16, pancreatic ADAM10, nuclear factor- κ B, and pancreatic T-cells expression were analyzed. Significant increase in biochemical, inflammatory and apoptotic parameters as well as the expression of membranous ADAM10, ADAM17, CXCL16, nuclear factor- κ B (NF- κ B), and infiltrated T-cells in the pancreatic islets were found in STZ group. SIM treatment in the presence of STZ was markedly improved biochemical and inflammatory parameters as well as it reduced the expression of CXCL16, ADAM10, ADAM17, NF- κ B, T-cells migration and apoptosis in the pancreatic islets. The work results shed the light on ADAM10 and ADAM17 role in promoting pancreatic b-cell death in T1DM. SIM improved STZ-induced changes in T1DM in mice. Therefore, CXCL16 and ADAM10/ADAM17 may serve as novel therapeutic targets for T1DM.

Recent Publications:

1. Moustafa Fathy, Mostafa A Darwish, Al-Shaimaa M Abdelhamid, Gehad M Alrashedy, Othman Ali Othman, Muhammad Naseem, Thomas Dandekar, Eman M Othman. (2022). Kinetin Ameliorates Cisplatin-Induced Hepatotoxicity and Lymphotoxicity via Attenuating Oxidative Damage, Cell Apoptosis and Inflammation in Rats. *Biomedicine*, 10 (7), 1620.
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3. E. Amin, M.S. Abdel-Bakky, M.A. Darwish, H.A. Mohammed, S. Chigurupati, K. A. Qureshi, M. H. Hassan. (2022). The Glycemic Control Potential of Some Amaranthaceae Plants, with Particular Reference to In Vivo Antidiabetic Potential of *Agathophora alopecuroides*. *Molecules*, 27 (3), 973.
4. Abdel-Bakky, M. S., Alqasoumi, A., Altowayan, W. M., Amin, E., & Darwish, M. A. (2021). Simvastatin mitigates streptozotocin-induced type 1 diabetes in mice through downregulation of ADAM10 and ADAM17. *Life Sciences*, 120224.
5. Darwish, Mostafa A., Amira M. Abo-Youssef, Bassim A. shehata, Ali A. Abo-Saif, Mohammed S. Abdelbakky. Resveratrol inhibits macrophage infiltration of pancreatic islets in streptozotocin-induced Type-I diabetic mice via attenuation of CXCL16/ NF- κ B p65 signaling pathway. *Life sciences* 272 (2021): 119250.

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Biography

Mostafa Darwish was graduated from faculty of pharmacy and ranked the first throughout the five years of study. He has his expertise in molecular pharmacology regarding mechanisms of cisplatin nephrotoxicity and the influence of drugs or substrates on transporting system like OCT2 in tubules on cisplatin excretion from his master work. In addition, he studied the role of chemokines in initiation as well as development of diabetes mellitus in his Ph.D. He studied the role of the chemotactic chemokine CXCL16 and its processing enzymes ADAM 10 and ADAM17 in pancreas of diabetic mice. He has a very good experience in animal modeling and molecular imaging techniques like immunofluorescence and western blotting.

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Diabetes and Child Obesity - Case presentation

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The presented clinical case aims to highlight the elements of the metabolic syndrome and the association with type 2 diabetes mellitus in children, as well as the necessary therapeutic behaviour to normalize the parameters that are modified in this child pathology. A 14-year-old patient presented with polyuria, polydipsia, polyphagia and weight loss (10kg in 9 months - 12,5% from initial weight). The history showed the child's unhealthy lifestyle, being sedentary and having a high-calorie diet, rich in refined carbohydrates, saturated and trans fats, poor in vegetables and fruits.

At presentation, the child was found to be overweight and with abdominal obesity, without clinical signs of metabolic acidosis. From the blood tests that were taken we recall: blood sugar at admission=339mg/dL, HbA1c=14.3%, total cholesterol=228mg/dL, HDL-cholesterol=23mg/dL, triglycerides=647mg/dL, incalculable LDLcholesterol, normal arterial pH, urinary ketone bodies present and positive urine culture for Escherichia Coli.

During hospitalization, C-peptide was determined with a value of 2.22ng/mL (normal values: 0.78-5.19 ng/mL) and anti-GAD antibodies under 5 IU/mL. Thus, the diagnosis of unbalanced insulin-requiring type 2 diabetes is established. The importance of lifestyle optimization was explained, then a hypoglycemic and hypolipidic diet was recommended containing foods rich in fiber and antioxidants. Insulin therapy was initiated, in regressively titrated doses, upon discharge when the patient received a recommendation for insulin degludec 6 IU/day and metformin 2g/day.

The urinary infection was treated with antibiotic therapy. The evolution of clinical and paraclinical parameters after 1 month, 3 months and 6 months after discharge is presented in Table 1. Thus, weight loss, balancing of diabetes and improvement of the lipid profile are observed. An obese child is an adult with type 2 diabetes who represents a great burden on the health system, but especially on himself. It is desirable to be aware of this problem and to be actively involved in its solution.

References

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Biography

Emilia Roxana MAZILU is a last year resident doctor into the field of Diabetology and Nutrition, specialty which she loves and which allows her to do her best in improving the lives of the patients with nutritional troubles or with autoimmune diabetes. She started gaining experience into this field near her hometown, at the University Hospital of Craiova in Roumania, continuing with a short period of time at a Hospital in France (CH

Cherbourg-en-Cotentin) and then she worked at Elias's Hospital in Bucharest improving her skills concerning Pediatric Diabetes, CGMS and insulin pumps. Dr MAZILU aims becoming a doctor who can make a difference in treating diabetes using compassion and understanding of people's illnesses with methods that can increase patients' motivation to make lifestyle changes. Even in type 1 diabetes, the psychological support is very important for the little patients and their parents when it comes to understand this condition. She is a focused doctor on the therapeutical education of the people in understanding a very actual disease that is diabetes.

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Challenges in Type-1 diabetes management during the conflict in Syria

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²United Arab Emirates University, UAE

Background: In Syria, a country at war for one-decade, medical care has been severely affected by shortages in medications, resources, food, and physicians.

Objectives: This study reviews the quality of care for patients with type-1 diabetes (T1D) receiving treatment in a private endocrinology service in Raqqa City, Syria.

Patients and Method: A cross-sectional medical record review for patients with T1D followed-up at a private clinic run by a certified endocrinologist in Raqqa, Syria. All medical records were evaluated for patients' characteristics and multiple diabetes care indicators.

Results: One hundred and ninety-seven patients with T1D were evaluated; 109 (55.3%) patients were females. The median age of participants was 16 (1.7–42) years, median duration of diabetes was 4 (0–27) years, and mean hemoglobin was A1C, 9.1% (8.7–9.5%). One hundred and twenty-five (63.5%) patients used premixed insulin. Eighty-one (42.4%) patients performed regular self-monitoring of blood glucose (SMBG) at least twice daily. Episodes of hypoglycemia and diabetic ketoacidosis (DKA) were reported in 62.4 and 54.4% of patients, respectively. There were significant correlations between the incidence of DKA and female gender and premixed insulin regimens.

Conclusion: In this private endocrine practice in Raqqa City, Syria, the majority of patients are treated with premixed insulin. Only a minority have their glycosylated A1c monitored regularly. Our unprivileged population is poorly controlled with increased risk of hypoglycemia and admissions with diabetic ketoacidosis.

Recent publications:

1. Diagnostic Dilemma in Two Cases of Hyperandrogenism DOI:10.1155/2018/9041018
2. Comparison between Fine Needle Aspiration Cytology of Thyroid Nodules and Histology after Surgical Excision DOI:10.16966/2380-548X.152
3. Two Cases of Pituitary Stalk Interruption Syndrome in Syrian Children DOI:10.1155/2020/2039649.

Biography

Ibrahim Alali graduated from Damascus university 2018 with Master's degree in endocrinology. He is working in a my private clinic preparing a research in Autoimmune disease prevalence in type 1 diabetes.

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