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11th International Conference on

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Chih Hsien Chiu et al., J Clin Mol Endocrinol 2018, Volume 3
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CURCUMIN DOWN REGULATES STEROIDOGENESIS IN LEYDIG CELLS VIA RESTRICTION OF PROTEIN KINASE A ACTIVITY

Chih Hsien Chiu, Yi Chun Lina and **Jyun Yuan Wanga**
National Taiwan University, Taipei, Taiwan

Curcumin administration reduces fertility and the serum testosterone level in male animals. In bovine adrenal zona fasciculata cells, curcumin treatment inhibited cortisol production stimulated by adrenocorticotropic hormone or a membrane-permeable cyclic adenosine monophosphate analog by suppressing the expression levels of steroid acute regulatory protein (StAR) and *CYP11A1*, which are critical for steroidogenesis. We investigated the effect of curcumin in testosterone production. In this study, both primary mouse Leydig cells and the MA-10 cell line were used. Enzyme immunoassay results showed that curcumin suppressed ovine luteinizing hormone-supported testosterone production in Leydig cells and 8-bromo-cyclic adenosine monophosphate-supported progesterone production in MA-10 cells. Fluo-3 AM staining results revealed that curcumin suppressed steroidogenesis without altering long term intracellular calcium level. Further results suggest the inhibitory effect is due to inhibition of protein kinase A (PKA) activity. Consequently, the expression of StAR and *Cyp11A1* were suppressed by attenuating the transcription factors Fos expression levels. In general, curcumin inhibited transcription factor expression under cAMP stimulation, and suppressed PKA activity and StAR and *CYP11A1* expression which obstructed steroidogenesis in Leydig cells.

Biography

Chih Hsien Chiu pursued PhD specializing in Animal Physiology, Steroidogenesis and Molecular Endocrinology in the Department of Animal Science and Technology of National Taiwan University, Taiwan. Presently, he is a Professor in the same department at the same university. He continues his research work at Academia Sinica in Taiwan.

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Ali Ahmed et al., J Clin Mol Endocrinol 2018, Volume 3
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CASE OF AUTOSOMAL DOMINANT HYPOCALCAEMIA

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We are presenting a 40 years old man with history of asymptomatic hypocalcaemia which was found during routine testing , calcium level 1.97 mmol/l, phosphate 0.94 mmol/l , PTH of 1.4 pmol/l (1.3 -9.4) and vitamin D of 27 ng/l , 24 urinary calcium of 4.6 mmol/l (2.5- 7.5) with urine volume of 2.5 L. The reason for low calcium was not clear ,but during the course of the investigation patient told us that his daughter who is 10 years old also found to have hypocalcaemia this together with the inappropriate low normal PTH low trigger the possibility of likely genetic cause of the hypocalcaemia this was confirmed with the presence of CaSR mutation, and the diagnosis of autosomal dominant hypocalcaemia was established. Prevalence of autosomal dominant hypocalcemia is unknown. The condition is likely underdiagnosed because it often associated with no signs or symptoms; however patient can presented with severe symptomatic hypocalcemia and seizures. Probably in the absence of stigmata of autoimmune hyperparathyroidism genetic causes should be investigated even without significant family history which is sometimes difficult to elicit. The condition usually doesn't require treatment, this patient was initially treated with calcium and vitamin D but this was subsequently stopped as the urinary calcium started to rise, calcium level remains within accepted level.

Biography

Dr Ali Ahmed is final year specialist registrar at Hull royal infirmary, Dr Najeeb Shah is specialist registrar in endocrinology , Dr Kmarudeen Mohammed is senior endocrinology and honorary lecturer at HYMS university , he also the programmer director of the endocrinology training at Yorkshire deanery in UK .

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Ramchandra Sargar et al., J Clin Mol Endocrinol 2018, Volume 3
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INTRATHYROIDAL IODINE CONTENT AND STREAMING FEATURES OF THYROID GLAND DISEASES

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Background: It is familiar that 80% of the iodine entry into the thyroid gland is in the phenol ring of thyroid hormones. The density of the thyroid gland in Hounsfield unit (HU), determined by computed tomography (CT), is directly proportional to the concentration of intrathyroid stable iodine. Hence, the thyroid density index in HU reflects the level of hormone formation and the preserved iodinated thyroid hormones directly in the thyroid gland. The thyroid gland is the only endocrine organ that, after the synthesis of hormones, stores them up to 50 days in the thyroid structure and secretes hormones into the blood at the request of the body.

Aim: The purpose of this work is to study the level of intrathyroidal hormone in clinical manifestations of thyroid gland diseases using diagnostic method of computed tomography.

Materials & Methods: The study comprised 160 individuals, aged 45±6.8 years, with thyroid gland diseases, which are accompanied with functional impairment of thyroid gland. Individuals with hypothyroidism included 87 patients - group 1, 59 individuals with primary hypothyroidism (group 1a) including -18 with iodine-induced hypothyroidism (group 1b). 35 individuals with hyperthyroidism - group 2 (including 8 with iodine-induced hyperthyroidism (group 2a), 36 individuals with euthyroidism - control group. All individuals were examined clinically and laboratory with determination of hormones – TSH and fr.T4. The study of the content of intrathyroidal iodine was carried out using computed tomography (CT) on the apparatus "Symbia T16" (Siemens) with determination of thyroid density in units of Hounsfield (HU). For the standard level, the values of HU 85-140 units were taken.

Results: In individuals with iodine-induced hyperthyroidism (group 2a), the density in HU was significantly increased to 182±12, and the TSH level was 0.03±0.01 mU/ml. In group 1 – HU was 85±9.0, and the level of TSH 0.04±0.01 mU/ml. In the group of individuals with hypothyroidism, the level of HU values also had a noticeable difference. In a subgroup of individuals with iodine-induced hypothyroidism (group 1b), the content of intrathyroidal iodine was above the reference values of 181±6 at a TSH of 6.0±0.9 mU / ml, and in group 1a (primary hypothyroidism) – HU was 53±7.0, and the TSH level was 9.28± 2.7 mU/ml. In the control group, the reported indicators were within reference values. Our studies showed that in all cases when there was an iodine-induced impairment of the thyroid function, the density in HU was above 140.

Conclusions: Contemporary assessment of thyroid density in HU with CT and TSH level in the bloodstream allows differential diagnosis between iodine-induced and true thyroid dysfunction, as well as correction for the error in determination of TSH concentration as a result of the influence of non thyroidal factors. Assessment of thyroid densities in HU in CT should be used for screening the risk of thyroid dysfunction and for determining the need for iodine prophylaxis and monitoring its effectiveness with a view to preventing iodine-induced transient thyroid dysfunction.

Biography

Ramchandra Sargar has completed his graduation (MBBS) from Smolensk State Medical University, Russia and clinical residency from RUDN University. Currently He is doing scientific research (PhD) from same university, (RUDN University). He has published the articles not only in Russian journals (Web of Science) but also in International Journals (Scopus). Area of research interest is early diagnosis of thyroid gland diseases.

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Mi Ock Lee et al., J Clin Mol Endocrinol 2018, Volume 3
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LIVER-SPECIFIC DELETION OF ROR α AGGRAVATES DIET-INDUCED NONALCOHOLIC STEATOHEPATITIS BY INDUCING MITOCHONDRIAL DYSFUNCTION

Mi Ock Lee, Hyeon Ji Kim, Yong Hyun Han, Hyelin Na and **Ju Yeon Kim**
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Mitochondrial dysfunction may play a key role in the progression of steatosis to nonalcoholic steatohepatitis (NASH); however, the molecular mechanism that controls the structure and function of mitochondria in NASH is not clearly understood. Here, we demonstrated that RORα is a regulator of expression of BNIP3 and PGC-1α, and thereby enhances mitochondrial quality. First, we observed that liver-specific RORα knockout mice (RORα-LKO) were more susceptible to high-fat diet-induced NASH compared with control, probably due to mitochondrial dysfunction. Concordantly, mitochondrial fission in response to nutrient stimuli was abolished with downregulation of BNIP3 and Phospho-DRP1 in the hepatocytes of RORα-LKO. RORα enhanced oxygen consumption rate and expression of genes associated with mitochondrial quality control. Finally, we observed the positive correlation of the expression levels of BNIP3 and PGC-1α with those of RORα in patients with steatohepatitis. Together, we demonstrated that RORα mediates mitochondrial quality under nutrient-overloaded conditions and propose RORα as a potential therapeutic target in treatment of NASH.

Biography

Mi Ock Lee received her undergraduate and Master's Degree in Pharmacy from Seoul National University (SNU), Republic of South Korea; pursued PhD in Pharmacology from University of Minnesota, USA. She is presently working as a Professor at the SNU- College of Pharmacy. She worked as a Postdoctoral Researcher at Sanford Burnham Prebys Medical Discovery Institute, SanDiego (USA). She also worked as an Assistant Professor at the Yonsei University College of Medicine, Republic of South Korea.

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METABOLIC CHANGES IN PATIENTS WITH TYPE 2 DIABETES AND SECONDARY INSULIN RESISTANCE

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Purpose: The purpose of this work is to study the features of laboratory indicators in patients with type 2 diabetes who received insulin therapy depending on the insulin dose.

Methods & Materials: Seventy three patients of both sexes were examined and treated in the endocrinology department of the municipal clinical hospital. Patients age ranged- 45 to 70 years old. Depending on the dose of insulin (within physiological need or higher) patients were divided into 2 groups. Patients in the first group (45 people) were treated with insulin dose ≤40 U/day; the second group (28 people) received insulin >40 U/day. During the exam-ination of patients, special attention was paid to study the following parameters: the current age of the patient and the age at the beginning of the disease, duration of type 2 diabetes, body mass index (BMI). The determination of fasting and postprandial glycemia, glycated hemoglobin (HbA1c) were included in glycemic control. Laboratory parameters like choles-terol, high-density lipoproteins (HDL), low-density lipoproteins (LDL), very-low-density lip-oproteins (VLDL), triglycerides, atherogenic index, crude protein, level of creatinine and urea, transaminases; insulin level and C-peptide have been analyzed.

Results: Parameters of the average age of patients in both groups had slight difference (61.2±3.9 and 62.3±4.5 years), at the beginning of the manifestation of type 2 diabetes, pa-tients from second group (48±4.4 years) were significantly younger than patients of the first group – 54.6±2.1 years. Patients in second group were more likely to have obese (BMI=34.8±3.2 kg/m2) than patients in first group (BMI=28.8±2.8 kg/m2), which partially explains the higher need for exogenous insulin. No significant differences were found be-tween groups according to the daily glycemic control criteria. Patients in group 1 had higher rates of pre-prandial glycemia than in group 2 – postprandial glycemia. Level of HbA1c in patients of the first group is – 8.23±0.6%, in second group is – 9.92±0.4%. There were no significant differences in mean values of patients of different groups in the structure of lipid profile. Patients of the second group, in which tendency to enhanced atherogenic index has been observed. The values of cholesterol-HDL, VLDL and triglycerides were higher in pa-tients with a total daily dose of insulin ≤40 U/day. Remnant of insulin secretion remained un-changed in both groups. C-peptide level in group 1 was 1.41±0.13, was 0.93±0.21 ng/ml in second group (at reference values 0.78-1.89 ng/ml). The correlation (Spearman Rank Order Correlations) of the HbA1c index with the C-peptide level was more significant ($r=-0.39$, $p<0.01$) than the correlation of this indicator with the dose of insulin ($r=-0.17$, $p<0.05$).

Conclusion: The risk factors of secondary insulin resistance in patients with type 2 diabetes include: the duration of the disease more than 10 years, BMI over 34 kg/m2 and the age to the manifestation of diabetes below 50 years.

Biography

Garoyan Vera Ogannesovna a 6th year student of RUDN-university, Moscow, Russia. Papers published: "Clinical Gerontology" ISSN: 1607-2499 AORTIC VALVE STENOSIS IN PA-TIENTS OF ELDERLY AND SENILE AGE. Area of research interest: Endocrinology and Cardiology.

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ACUTE PRESENTATION OF CUSHING'S DISEASE WITH REFRACTORY HYPOKALEMIA PITUITARY MACROADENOMA ON MRI

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A 68 year old female with known history of hypertension and recent onset Type 2 Diabetes Mellitus requiring Insulin therapy, was referred for cellulitis of hand/forearm which did not respond to Intravenous antibiotics. She subsequently developed an abscess in this region which was successfully drained. Following the surgery she developed hypokalaemia in the range of 1.9-2.8 mmol/L which was refractory to treatment. Her serum magnesium was normal. She was Hypertensive with systolic Blood pressure around the 150 mark. On examination, she had central obesity and proximal myopathy with thin and easily bruisable skin of recent onset. Striae noted in the abdomen. Her 24 hour urinary free cortisol was found to be grossly elevated at 4626 nmol/24 hour. ACTH was 154 ng/L. Urinary potassium was 70mmol/L. A CT thorax, abdomen and pelvis excluded an ectopic ACTH secreting source. MRI of her pituitary gland revealed a macroadenoma invading the right cavernous sinus and protruding into the right sphenoid sinus. the pituitary was operated on. Postoperative 24 hour urinary free cortisol fell to 107 nmol/24 hour, ACTH level to 18 ng/L, serum cortisol level of 206nmol/L with the normalization of the potassium level. The Histology of the pituitary mass revealed an adenoma with ACTH and GH expression. Surgery in this case led to improvement in blood pressure and glycaemic control together with complete resolution of hypokalaemia. Cortisol excess due to Cushing's disease should be considered in the investigation of patients with refractory hypokalaemia in a suggestive clinical context.

Biography

Dr Najeeb Shah is specialist registrar in endocrinology , Dr Ali Ahmed is a specialist registrar at Hull royal infirmary, Dr R.Karim is specialist registrar in endocrinology , Dr Kmarudeen Mohammed is senior endocrinology and honorary lecturer at HYMS university , he also the programmer director of the endocrinology training at Yorkshire deanery in UK ..

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Effect of the duration and presence of proteinuria on parameters of ovarian reserve in patients with chronic kidney disease stages 3-4.

Iwona Szydłowska, Aleksandra Marciniak, Agnieszka Brodowska, Marcin Lisak, Sylwia Przysiecka, Jacek Różański.

THE AIM OF THE STUDY was to assess the effect of the duration of CKD and presence or absence of proteinuria on ovarian reserve parameters in patients with chronic kidney disease stages 3-4.

MATERIALS AND METHODS:

The examination included 24 patients ages 23 to 45, all with chronic kidney disease stages 3-4.

The examined parameters of ovarian reserve included: transvaginal ultrasonography (to assess AFC and ovarian volume), serum AMH, FSH and E_2 assessed in early follicular phase of menstrual cycle.

All patients included to the study had been diagnosed with CKD (kidney damage or dysfunction) and had decreased GFR- below 60 ml/min/1.73 m^2 for at least 3 months:

- moderate reduction in GFR (30–59 ml/min/1.73 m^2)- stage 3 of CKD,
- severe reduction in GFR (15–29 ml/min/1.73 m^2)- stage 4 of CKD.

Parameters of ovarian reserve were assessed in patients with chronic kidney disease stages 3-4 depending on the duration of the disease (less or longer than 10 years) and depending on the presence or absence of proteinuria.

RESULTS:

Parameters of ovarian reserve: ovarian volume, AFC, AMH, FSH; estradiol (E2) in patients with chronic kidney disease depending on the duration of the disease.

Parameter of ovarian reserve		≤ 10 years of CKD			> 10 years of CKD			P
		x ± SD	M_e	min– max	x ± SD	M_e	min– max	
Ovarian volume	Right ovary (cm3)	3.70±2.06	3.32	1.80-9.70	3.56±1.59	3.32	1.64-6.73	0.854
	Left ovary (cm3)	4.82±3.40	3.89	1.56-13.30	2.95±1.32	2.57	1.17-6.00	0.089
Antral follicle count (AFC)	Right ovary (n)	4.33±1.50	4.00	3.00-7.00	3.58±1.38	3.00	2.00-6.00	0.215
	Left ovary (n)	3.58±1.44	4.00	1.00-6.00	3.75±1.54	3.50	2.00-7.00	0.787
AMH (ng/mL)		1.31±0.46	1.28	0.63-2.24	1.18±0.83	1.01	0.02-2.79	0.220
FSH (IU/L)		8.70±3.35	8.71	5.92-18.7	7.65±3.51	7.18	3.63-14.70	0.456
E2 (pg/mL)		68.93±52.08	61.63	7.53-214.18	140.77±115.67	99.50	43.43-461.70	0.024

Hormonal parameters of ovarian reserve: AMH, FSH; estradiol (E2) in patients with CKD depending on the presence or absence of proteinuria

Parameter of ovarian reserve	CKD with proteinuria			CKD without proteinuria			P
	x ± SD	M_e	min– max	x ± SD	M_e	min– max	
AMH (ng/mL)	1.28±0.77	1.31	0.02-2.79	1.18±0.51	1.08	0.46-2.16	0.711
FSH (IU/L)	8.52±3.39	7.68	5.03-18.70	7.70±3.53	7.45	3.63-14.70	0.574
E2 (pg/mL)	111.23±115.75	70.65	7.53-461.70	95.91±60.04	78.25	33.20-233.70	0.706

CONCLUSIONS:

1. Ovarian reserve (ovarian volume, AFC, AMH, FSH and E2) is not dependent on the duration of CKD.
2. Hormonal parameters of ovarian reserve: AMH, FSH, E2 are not dependent on the presence or absence of proteinuria in patients with CKD.

Parameters of ovarian reserve in patients with chronic kidney disease depending on glomerular filtration rates.

Iwona Szydłowska, Aleksandra Marciniak, Agnieszka Brodowska, Marcin Lisak, Sylwia Przysiecka, Jacek Różański.

THE AIM OF THE STUDY was to assess the parameters of ovarian reserve in patients with chronic kidney disease stages 3-4 and compare them between 3 groups of patients with decreased GFR

MATERIALS AND METHODS:

The examination included 24 patients ages 23 to 45, all with chronic kidney disease stages 3-4.

The examined parameters of ovarian reserve included: transvaginal ultrasonography (to assess AFC and ovarian volume), serum AMH, FSH and E_2 assessed in early follicular phase of menstrual cycle.

All patients included to the study had been diagnosed with CKD (kidney damage or dysfunction) and had decreased GFR below 60 ml/min/1.73 m^2 for at least 3 months.

Patients were divided depending on the glomerular filtration rates into 3 groups:

- with GFR 45-59 ml/min/1,73 m^2
- with GFR 30-44 ml/min/1,73 m^2
- with GFR 15-29 ml/min/1,73 m^2

RESULTS:

Parameters of ovarian reserve: ovarian volume, AFC, AMH, FSH; estradiol (E2) depending on estimated glomerular filtration rates (eGFR) ranges in patients with CKD

Parameter of ovarian reserve		GFR 45- 59 (mL/min/1.73 m^2)		GFR 30- 44 (mL/min/1.73 m^2)		GFR 15- 29 (mL/min/1.73 m^2)		P
		x ± SD	M_e	x ± SD	M_e	x ± SD	M_e	
Ovarian volume	Right ovary (cm3)	3.85± 2.14	3.55	3.49±0.63	3.60	2.68± 0.30	2.74	0.476
	Left ovary (cm3)	4.51± 3.07	3.70	2.87±1.12	2.73	2.20± 0.58	2.35	0.208
Antral follicle count (AFC)	Right ovary (n)	4.06±1.44	4.00	4.00±1.73	3.0	3.33± 1.53	3.00	0.698
	Left ovary (n)	4.00±1.55	4.00	3.60±0.55	4.0	2.00±1.00	2.00	0.099
AMH (ng/mL)		1.40± 0.65	1.52	1.07±0.65	1.09	0.63±0.43	0.63	0.189
FSH (IU/L)		8.42± 4.06	7.52	8.27±1.23	8.47	6.71± 1.47	7.39	0.593
E2 (pg/mL)		81.98±59.15	65.15	151.03±175.54	88.0	149.81±59.78	139.20	0.135

CONCLUSION:

There are no significant differences in parameters of ovarian reserve: ovarian volume, AFC, AMH, FSH and E2 among the patients in stage 3 or 4 of chronic kidney disease.

Parameters of ovarian reserve in patients with chronic kidney disease stages 3-4.

Iwona Szydłowska, Aleksandra Marciniak, Agnieszka Brodowska, Marcin Lisak, Sylwia Przysiecka, Jacek Różański

THE AIM OF THE STUDY was to assess the parameters of ovarian reserve in patients with CKD stage 3 to 4.

MATERIALS AND METHODS:

The examination included 24 patients ages 23 to 45, all with chronic kidney disease stages 3-4. Control group included 28 patients ages 28 to 42 with regular menstrual cycles and without chronic diseases in medical history.

The examined parameters of ovarian reserve included: transvaginal ultrasonography (to assess AFC and ovarian volume), serum AMH, FSH and E_2 assessed in early follicular phase of menstrual cycle.

All patients included to the study had been diagnosed with CKD (kidney damage or dysfunction) and had decreased GFR- below 60 ml/min/1.73 m^2 for at least 3 months:

- moderate reduction in GFR (30–59 ml/min/1.73 m^2)- stage 3 of CKD,
- severe reduction in GFR (15–29 ml/min/1.73 m^2)- stage 4 of CKD.

RESULTS:

Parameters of ovarian reserve: ovarian volume, AFC, AMH, FSH; estradiol (E2) in patients with or without chronic kidney disease (CKD)

Parameter of ovarian reserve		Study group (CKD)			Control group (without CKD)			P
		x ± SD	M_e	min– max	x ± SD	M_e	min– max	
Ovarian volume	Right ovary (cm3)	3.63±1.8	3.31	1.64-9.7	3.12±0.75	3.10	2.30-5.30	0.393
	Left ovary (cm3)	3.79±2.72	2.73	1.17-13.3	3.12±0.60	3.20	1.90-4.60	0.861
Antral follicle count (AFC)	Right ovary (n)	3.96±1.46	3.5	2.00-7.00	5.82±1.36	6.00	3.00-8.00	<0.001
	Left ovary (n)	3.67±1.46	4.00	1.00-7.00	5.82±1.56	6.00	2.00-9.00	<0.001
AMH (ng/mL)		1.24±0.66	1.08	0.02-2.79	3.90±2.78	3.58	0.35-10.32	<0.001
FSH (IU/L)		8.18±3.40	7.56	3.63-18.70	7.24±2.67	7.00	2.70-15.70	0.240
E2 (pg/mL)		104.85±95.09	75.75	7.53-461.70	59.65±52.66	37.00	22.02-211.70	0.002

CONCLUSIONS:

1. The most sensitive parameters of ovarian reserve are AMH and AFC.
2. On the base of the most sensitive parameters of ovarian reserve (AMH and AFC) reproductive potential is lower in patients with chronic kidney disease stages 3-4 in comparison to women without chronic diseases.
3. AMH and AFC parameters as the most sensitive parameters allow to predict problems with fertility in group of patients with CKD in the nearest future.

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CHRONIC UNPREDICTABLE ENVIRONMENTAL STRESS IMPAIRS BIOCHEMICAL AND PHYSIOLOGICAL HOMEOSTATSIS: ROLE IN DIABETES MELLITUS

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[2]Aligarh Muslim University, India

Chronic unpredictable environmental stress (CUES) may induce predisposition to diabetes mellitus. This study investigates the role of CUES on impaired homeostasis. Stressed group mice (n=20) were exposed to CUES for 16 weeks. Weekly body weight, feed consumption, feed efficiency ratio, fasting blood glucose were monitored. Plasma HbA1c, plasma cortisol, plasma epinephrine and plasma insulin, serum lipids, antioxidants and carbohydrate metabolizing enzymes activity were assessed along with DNA damage and histopathological examination of liver, kidney, pancreas, spleen and skeletal muscles. Semi-quantitative expression of IL-4, IL-6 and β- actin was also assessed. Fasting blood glucose levels & HbA1c in the stressed were significantly higher compared to control (p<0.001). Serum lipids were found insignificantly higher in stressed mice compared to control. Body weights of the stressed mice and feed efficiency ratio were found significant (p<0.001). Plasma corticosterone, plasma epinephrine, HOMA-IR (Homeostatic model assesment- insulin resistance) was found to be significantly higher in the stressed group (p<0.001). Plasma insulin level was found to be significantly lower in the stressed group (p<0.001). Significant changes were observed in antioxidants level, carbohydrate metabolizing enzymes activity, peripheral tissues and DNA integrity. Expression of IL-4, IL-6 was found significantly higher in the stressed group. CUES initiates pathogenesis of diabetes.

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THE EFFECT OF A NOVEL CURCUMIN DERIVATIVE ON PANCREATIC ISLET REGENERATION IN EXPERIMENTAL TYPE-1 DIABETES IN RATS: LONG TERM STUDY

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Several studies highlight curcumin's benefit as a hypoglycemic agent, however; a limited number of reports present the importance of curcumin in improvement of pancreatic islets in diabetes. The antidiabetic effect of a novel curcumin derivative and its effect on pancreatic islet regeneration in experimental type I diabetes were investigated. Streptozotocin-diabetic rats were treated orally with the novel curcumin derivative (NCD) for 40 days. Fasting plasma glucose, insulin and C-peptide were determined periodically for 10 months. Histopathology was performed to allow the assessment of pancreatic islet morphology. Insulin and CD105 were detected immunohistochemically. NCD treated diabetic rats showed significantly lowered plasma glucose and increased plasma insulin and C-peptide levels. Plasma insulin and C-peptide continued to increase for ten months reaching levels significantly higher than the basal level. NCD treated rats showed the appearance of primitive cell collections, large insulin positive cells and CD105 positive cells in the adipose tissue infiltrating the pancreatic tissues. This was followed by the gradual appearance of insulin positive cells in the islets while, CD 105 positive cells remained in the adipose tissue. After 5 and up 10 months from the onset of diabetes, treated rat pancreas showed, well developed larger sized islets with disappearance of primitive cell collections and CD 105 positive cells. The NCD possesses antidiabetic actions and enhanced pancreatic islets regeneration properties.

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25-HYDROXYVITAMIN D STATUS CORRELATION WITH MALE HYPOGONADISM AMONG TYPE 2 DIABETIC PATIENTS

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Background: Hypogonadism complicating diabetes was predominately hypogonadotropic reflecting pituitary dysfunction. We evaluated the relationship between vitamin D status with testosterone deficiency among patients with type 2 diabetes mellitus (T2DM).

Results: Testosterone deficiency prevalence in T2DM patients was 41.1%. Hypogonadism diabetic patients had significant lower 25(OH)D levels than patients without hypogonadism. Diabetic patients with testosterone deficiency had significant higher prevalence of vitamin D deficiency (61.5% and 28.6%), and non-significant higher prevalence of insufficiency (84.6% and 82.1%) in comparison with patients without. Vitamin D deficient diabetic patients showed significant lower total testosterone levels but not gonadotropin as compared to those without deficiency. In linear regression analysis, we found that 25(OH)D was a significant predictor of total testosterone levels in diabetic patients. As per logistic regression analysis, vitamin D deficiency was found to be a significant risk factor for male hypogonadism in diabetic patients.

Conclusions: Diabetic patients with testosterone deficiency had significant lower 25(OH)D levels and higher prevalence of vitamin D deficiency and insufficiency as compared to those without testosterone deficiency. Vitamin D deficient patients had lower testosterone levels. 25(OH)D was a significant predictor of total testosterone levels. Vitamin D deficiency was a significant risk factor for male hypogonadism in diabetic patients.

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ENDOCRINE DISRUPTER COMPOUNDS IN WASTEWATERS AND THEIR TREATMENT

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Endocrine disrupting compounds, EDCs, are recently recognized pollutants which interfere with the hormonal systems of animals. At the extreme end are known to cause gender shifts and reduced fecundity in fish. Their possible interference with the water cycle thereby affecting humans has been implicated. Current view in combating EDCs in water cycle is the multi barrier approach. Where EDCs are tackled in effluents, the environment, and in potable water supply. Therefore, information on their biodegradability and elimination is vital for sustainable strategies of the future. Five different EDCs were selected as model compounds for monitoring in seven selected treatment plants; two natural hormones: estrone and progesterone, exclusively discharged by humans. Carbamazepine, diltiazem and acetaminophen are pharmaceuticals often detected in wastewaters at ppb levels. The 24 h composite samples were analyzed in influents and effluents of various modifications of conventional activated sludge (CAS) and one membrane, MBR (Membrane bioreactor), plant. One striking finding was the removals obtained in conventional plants, which were far exceeding those obtained in the mid-scale or lab-scale MBR plants. The hydrophilic species were found amenable to biological treatment whereas the two strongly hydrophobic chemicals (KOW>4), carbamazepine and diltiazem, were effectively removed by the CAS process mainly by sorption onto sludge, whereas the MBR plants were unable to remove these compounds from effluents, not even by sorption onto sludge. This is a cause for concern as MBRs are considered the future generation of wastewater treatment since their effluents are sparklingly clear and disinfected, hence suitable for reuse. An ozone assisted aerobic sludge digestion process developed in the lab provided >99% EDCS removal at reasonable cost.

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TOXOPLASMA GONDII AS A POSSIBLE PATHOGEN OF TYPE-1 DIABETES MELLITUS: EVIDENCE FROM CASE-CONTROL AND EXPERIMENTAL STUDIES

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Toxoplasma gondii **is an obligate intracellular parasite which can replicate inside any nucleated cells including those of pancreas and induces a T-cell immune response. Type-1 diabetes (T1D) is considered as an autoimmune disease in which T-cell mediated destruction of insulin secreting cells in the pancreas occurs. Thus, theoretically, toxoplasmosis could play a possible role in the development of T1D; therefore, this work was designed. Interestingly, in the case-control study, the seropositivity of anti-*Toxoplasma* IgG was significantly higher among T1D (86.37%) than T2D (66.67%) and the control group (60%). The experimental study included acute and chronic Me49 *T. gondii* infected mice groups in addition to a control group. Pathological examination revealed the presence of *T. gondii* zoites adjacent to the islets of Langerhans of the acutely infected mice. With chronic infection, there was a significant reduction of islets number and sizes in association with grade-1 insulitis. The immunohistochemical study showed significant infiltration of the islets of chronically infected mice by $CD8^+$ and $CD45^+$ immune cells. In contrary to the control group, the islets of the chronic group showed significantly higher expression of the apoptotic marker caspase-3 and a significantly lower expression of the proliferation marker Ki69. Finally, a significant reduction of insulin expression in the islets of chronic infection group was detected in association with a significant increase in serum glucose concentrations; however, the establishment of diabetes did not occur throughout this work. Thus, this study presents an evidence for the probable role of chronic toxoplasmosis in the development of T1D.**

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PREVALENCE OF DISORDERS OF SEXUAL DEVELOPMENT IN NEONATES IN GHANA

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Background & Aim: Genital anomalies including disorders of sexual development (DSDs) are prevalent in all societies. There is no study on DSDs in Ghana. We aimed to describe characteristics of abnormal genitalia and prevalence of DSDs in neonates delivered at Komfo Anokye Teaching Hospital, Kumasi, Ghana.

Methods: Trained research assistants performed systematic genital examination in consecutive neonates over one year. All neonates with suspected abnormal genitalia were further examined by pediatric endocrinologists. Informed consent was obtained for all participants.

Results: A total of 10337 neonates (including 389 stillbirths) were delivered. We examined 9255 neonates (93% of all live births) within 72 hours of life. Normal genitalia were identified in 47.93% females and 51.86% males. Nineteen neonates (0.21%) had disorders of sexual disorders (DSDs). Seven had ambiguous genitalia (four with clitoromegaly, presence of uterus on ultrasound and elevated 17-hydoxyprogesterone, suggesting CAH (Congenital adrenal hyperplasia). The remaining three had microphallus, gonads in bifid scrotum or in the inguinal region, suggesting male DSDs. The twelve other neonates had isolated micropenis (n=5) and isolated hypospadias (n=7) and were considered as males.

Conclusions: DSDs including CAH is not uncommon in Ghana and proper access to diagnostic tools and medicines is important.

Recommendation: All babies in low income countries should have genital examination at birth so as to identify DSDs and subtle anomalies of genitalia at birth.

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REAL WORLD PRACTICE LEVEL DATA ANALYSIS CONFIRMS LINK BETWEEN VARIABILITY WITHIN BLOOD GLUCOSE MONITORING STRIP (BGMS) AND GLYCOSYLATED HAEMOGLOBIN HBA1C IN TYPE 1 DIABETES

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Background & Aim: Minimizing blood glucose variation is key to optimizing health outcomes for people with diabetes. Our aim is to see if we could quantify the impact of Blood Glucose Monitoring Strips variability (BGMSV) at GP (General Practitioners) practice level on the variability of reported glycated haemoglobin (HbA1cV) levels published in the National Diabetes Audit, and from that estimate the impact on Blood Glucose Variability (BGV)

Materials & Methods: The overall GP Practice BGMSV was calculated from the quantity of main types of BGMS being prescribed combined with the published accuracy, as % results within +/-% bands from reference value for the selected strip type. An estimated HbA1c mean and variability (HbA1cV) was calculated for each practice year from % results within HbA1c bands published in the National Diabetes Audit for Type 1 diabetes (T1DM). The regression coefficient between the BGMSV and HbA1cV was calculated. To allow for the aggregation of estimated 3 tests/day over 13 weeks (i.e. 300 samples) of actual Blood Glucose values up to the HbA1c, we multiplied HbA1cV coefficient by √300 to estimate an empirical value for the impact of BGMSV on BGV.

Results: 4,524 practice years with 159,700 T1DM patient years where accuracy data was available for more than 80% of strips prescribed were included, with overall BGMSV 6.5% and HbA1c mean of 66.9 mmol/mol (8.3%) with variability of 13 mmol/mol equal to 19% of the mean. At a GP practice level, BGMSV and HbA1cV as % of mean HbA1c (in other words the spread of HbA1c) were closely related with a regression coefficient of 0.176, p-value <0.001 .After correction for aggregation the equivalent BGV correlation factor was calculated at 3. The comparable figure previously found in an *in-silico* study was 2.7. Applying this factor for BGMS to the national ISO accepted standard where 95% results must be ≤+/-15% from reference, revealed that for BG, 95% results would ≤+/-45% from the reference value. So, for a patient with BG target @10mmol/l using ISO standard strips, on 1/20 occasions (average 1/week) their actual blood glucose value could be >+/-4.5mmol/l from target, compared to the best performing BGMS with BG >+/-2.2 mmol/l from reference on 1/20 occasions.

Conclusions: Use of more variable/less accurate BGMS is associated both theoretically and in practice with a larger variability in measured BG and HbA1c, with implications for patient confidence in their day to day monitoring experience.

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DIFFERENCE IN WAIST CIRCUMFERENCE, WAIST HIP RATIO (WHR), GLYCEMIC INDEX, AND DIETARY FIBER INTAKE IN PATIENTS WITH TYPE II DIABETES MELLITUS AND OTHER TYPES OF DIABETES MELLITUS

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Diabetes mellitus (DM) is a degenerative disease that continues to increase its prevalence worldwide. Increased cases of DM are influenced by several factors such as changes in lifestyle, obesity and dietary society. Studies have shown that central obesity is associated with insulin resistance (type II DM). The purpose of this research is to know the difference of waist circumference, waist hip ratio, glycemic index and fiber in DM type II patient and other type. The research design used was observational analytic with cross sectional approach on 58 samples. The investigation was conducted from April to May 2017. The data of waist circumference and waist hip ratio (WHR) were collected by anthropometric measurement. Food consumption data with glycemic index and fiber by filling in semi quantitative form Food Frequency (FFQ). Data were analyzed using univariate and bivariate independent t test. The results waist circumference (p=0.86), waist hip ratio (WHR) (p=0.92), food consumption with high glycemic index (p=0.14), index glycemic low (p=0.06), and fiber consumption (p=0.97) (p>0.05) in patients with type II DM and other types of DM. There are no differences in abdominal circumference, waist circumference ratio, food consumption with glycemic index and fiber consumption in patients with type II DM and other types of DM. It is expected the participation of hospital staff to patients with diabetes to provide information about the benefits of glycemic index food and encouragement to maintain weight, increase fiber consumption so that blood sugar levels can be controlled.

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POST-OPERATIVE HYPOCALCEMIA FOLLOWING OPEN THYROIDECTOMY FOR BENIGN MULTINODULAR GOITERS USING FOCUS HARMONIC SCALPEL VERSUS CONVENTIONAL SUTURE LIGATION TECHNIQUE FOR HEMOSTASIS: A PROSPECTIVE, SINGLE-BLIND, RANDOMIZED CONTROLLED TRIAL

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Background: Vessel hemostasis during thyroidectomy is the mainstay of reducing the risk of post-operative hypocalcaemia, which can be achieved by using several techniques. The aim of this study was to assess the occurrence of hypocalcaemia, 24-48 hours following total thyroidectomy by using FOCUS harmonic scalpel (HS) versus the conventional suture ligation (CSL).

Patients & methods: A prospective, single-blind, randomized trial in which 76 patients with benign multi nodular goiters scheduled to undergo total thyroidectomy, were randomized into two groups: to receive HS (n=38) or CSL (38). Patients were monitored for hypocalcaemia at 24 and 48 hours post-operatively and the lengths of post-operative hospital stay. Statistical analysis to detect between-group difference was based on student's t-test performed using SPSS.

Results: The incidence post-operative hypocalcaemia was 15.79% and 36.84%, in HS and CSL groups, respectively (p =0.033). Identification of in situ parathyroid glands was significantly associated with hypocalcaemia in the CSL group (p =0.019) but not in the HS group (p= 0.372). Length of hospital stay was 2.63 ± 0.85 and 1.37 ± 0.67 days, respectively (p<0.001),

Conclusions: FOCUS HS reduces overall hypocalcaemia risk compared to conventional hemostasis during thyroidectomy for benign thyroid disease. The conventional suture ligation technique should be replaced with FOCUS HS in thyroid surgery practice.

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CARDIOVASCULAR RISK FACTORS AND SUBCLINICAL ATHEROSCLEROSIS IN EGYPTIAN PATIENTS WITH T1DM

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Introduction: Type 1 diabetes (T1DM) is associated with increased risk of cardiovascular disease. Several studies have highlighted the metabolic syndrome and IR (insulin resistance) as an important precursor of cardiovascular disease, however, few data exist on its occurrence in type-1 diabetes.

Objectives: The objective of this work is to study the presence of early signs of atherosclerosis as well as myocardial structure and function in relation to some predisposing risk factors for cardiovascular disease as metabolic syndrome and estimated glucose disposal rate (eGDR) as, a surrogate measure of insulin resistance, in T1DM patients.

Study Design & Methodology: This study was conducted on 30 T1 diabetic patients, age range 11-30 years and having history of diabetes 5 years. They were compared to apparently healthy subjects aged around 20. After complete clinical examination including body mass index (BMI), waist circumference (WC), waist-hip ratio(WHR) and blood pressure measurements, blood samples were withdrawn to determine fasting, and postprandial blood glucose levels, HbA1c, lipid profile, fasting C-peptide, 24-h urinary albumin and fundus examination. Estimated glucose disposal rate (eGDR) was calculated and used as a marker of IR. Of imaging techniques, echocardiography and carotid intima media thickness (CIMT) were done.

Results: There was significant difference between patients and controls regarding blood glucose, HbA1c, lipid profile and WHR. Diabetic patients had significant lower HDL, C- peptide, and higher TG, 24 h micro-albuminuria, and CIMT, in comparison to control subjects. Metabolic syndrome criteria were met in 26.7% of patients. Cut off value of eGDR was <9 (mg/Kg-1.min-1), with sensitivity of 70% and specificity of 100%. Twenty one patients (70%) had eGDR <9 (mg/Kg-1.min-1), and 9 patients (30%) had eGDR >9 (mg/Kg-1.min-1). Also there were negative correlation between eGDR and HbA1c, WHR, CIMT, interventricular septal thickness(IVST), posterior wall thickness (PWT), and left ventricular mass index (LVMI).

Conclusion: Main cardiovascular risk factors are visceral obesity, bad glycemic control and increased CIMT. Metabolic syndrome is estimated to affect 26.7% of T1D patients. eGDR is a reliable tool to pick up patients with IR with sensitivity of 70% and specificity of 100%. Although T1DM patients have low C- peptide level, yet 70% of them are IR.

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