variants, after calculating power analysis to ensure the reliability of the conclusions drawn. A next-generation sequencing (NGS) study to search for specific ATP7B AD mutations on patients typified by increased values of non-Cp Cu has been carried out.

**Results:** The study revealed no difference between FTLD and healthy controls, while AD had increased values of non-Cp Cu. In the NGS study, we expect to detect a difference in the biochemical variables among genetic groups of at least 60%. With such expected changes, the size n = 60 is sufficient to detect a difference between genetic groups with a power of higher than 90% (0<0.05).

**Conclusion:** Excess non-Cp Cu is not a common signature of dementia but it appears specific for AD.

### Specific Cutoffs for HOMA1-IR, HOMA2-IR, HOMA1-%B, and HOMA2-%B in Adult Egyptian Patients

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**Objective:** To identify specific cutoffs for different types of homeostasis model assessments (HOMA) in adult Egyptian patients.

**Methods:** Four hundred adult patients with the same geographic and demographic backgrounds were divided into four groups (100 persons each): normal, newly diagnosed prediabetic, newly diagnosed insulin-dependent diabetes mellitus (IDDM) type I, and newly diagnosed non-insulin-dependent DM (NIDDM) type II. Inclusion criteria include HbA1c (<5.6 in normal, <6.4 in prediabetes), fasting plasma glucose (<100 mg/dL in normal, <125 mg/dL in prediabetes), postprandial glucose (<140 mg/dL in normal, <199 mg/dL in prediabetics), clinical conditions (such as weight loss), and insulin peak (30 minutes in normal, >30 min in prediabetes and NIDDM). Exclusion criteria include exogenous insulin intake, insulin autoantibodies, renal impairment, chronic liver diseases, aging, starvation, pregnancy, postmenopause, sampling during sleep time, and excessive carbohydrate intake. Laboratory investigations included fasting plasma glucose, HbA1c, fasting insulin, and fasting C-peptide. Calculations depended on equations of HOMA1 and HOMA2 calculator. All hormones results were expressed in mol/L. Borderline zones (such as insulin resistances in prediabetics) were widened to include all potential overlaps due to variations in results of HOMA2 using insulin and C-peptide simultaneously, improving differentiation between normal and DM. Results were validated by correlations with clinical conditions as well as effectiveness and efficiency of “HOMA-guided” medical management.

**Results:** For HOMA1-IR, the cutoffs were <2.6 (normal), 2.6 to 5.08 (prediabetes), and >5.08 (NIDDM). For HOMA2-IR, the cutoffs were <1.22 (normal), 1.22 to 2.72 (prediabetes), and >2.72 (NIDDM). For HOMA1-%B, the cutoffs were >48.9% (normal), 48.9% to 25.0% (borderline), and <25.0% (NIDDM). Cutoffs for HOMA2-%B were >54.2% (normal), 54.2% to 34.4% (borderline), and <34.4% (NIDDM).

**Conclusion:** Applying HOMA1 and HOMA2 cutoffs in medical management of DM and prediabetes enhances interpretation of medical guidelines and facilitates optimization of individualized medicine.

### Studies on Levels of Some Biochemical Markers of Reproduction and Oxidative Stress in Male Partners of Subfertile Couples in a Nigerian Community

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**Objectives:** Infertility is considered a serious problem in developing countries due to the premium placed on childbearing. In recent years, oxidative stress (OS) has been identified as an underlying etiologic factor in the pathogenesis of male infertility. This study was done to portray the association between male reproductive hormones and sperm characteristics and to assess the role of oxidative stress in male infertility.

**Methods:** The cross-sectional study involved a total of 102 males subjects; 62 were male partners of subfertile couples (30 oligospermic, 26 oligoasthenospermic, and 6 azospermic) attending a fertility clinic at Federal Medical Centre Owerri, Nigeria, while 40 subjects were (age-matched) male partners of fertile couples. Serum levels of follicle-stimulating hormone, luteinizing hormone, testosterone, malondialdehyde, and vitamin E were determined using modified enzyme immunoassay (for hormones) and spectrophotometric methods (for MDA and vitamin E).

**Results:** There were significant reductions in sperm concentration and levels of testosterone and vitamin E in male partners of infertile couples when compared to their fertile counterparts. A significant increase was observed in the mean levels of MDA and FSH in the subfertile group compared to the fertile males. Comparing these parameters per age, there were significant increases in the mean sperm concentration, testosterone, and vitamin E levels of subjects aged 20 to 37 years compared to those between the ages of 38 and 55 years. FSH and MDA levels were also significantly reduced in subjects between the ages of 20 and 37 years compared to those between the ages of 38 and 55 years.
**Conclusion:** A positive association exists between sperm characteristics and serum levels of male reproductive hormones. However, the inverse relationship between these hormones and MDA in subjects between 38 and 55 years suggests oxidant-induced early advancement toward andropause among men of reproductive age in the study area. Antioxidant supplementation is thus recommended.

**Copper Abnormalities in Psychiatric Disorders: Searching for ATP7B Mutations**

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**Objectives:** Failure of copper control is the cause of Wilson disease (WD), a rare autosomal recessive disorder typified by increased levels of copper nonbound to ceruloplasmin (non-Cp Cu) and caused by mutations in the *ATP7B* gene, a copper transporter at the trans-Golgi network in the hepatocyte. Wilson disease has a broad spectrum of symptom presentation. About one-third of cases present with liver disease, another third with neurological manifestations, and the last third presents initially psychiatric and behavioral abnormalities. Based on mass screening studies, data about WD prevalence have been recently questioned, suggesting that WD might be much more common than estimated in the past (1984), passing from 1:30,000 to 1:3,000 or even 1:1,500 cases. Misdiagnosis for those cases with a psychiatric primary presentation can be suspected.

**Methods:** To this aim, in September 2017, we started a project aimed at screening copper anomalies in patients with psychiatric disorders. In March 2017, we recruited 43 consecutive subjects with psychiatric disorders (anxiety disorder, mood disorder [major depression, bipolar depression], psychotic disorder [schizophrenia and delusional disorder], personality disorder) and compared them with 39 healthy control subjects for copper (Cu); ceruloplasmin concentration (iCp), activity (eCp), and specific activity (eCp/iCp); Cu:Cp ratio; iron; ferritin; and transferrin. Psychiatric clinical scale scores, medication, and routine lab tests were also collected. A next-generation sequencing of the *ATP7B* gene for the detection of WD mutations has been carried out to confirm a WD diagnosis. Recruitment is still ongoing.

**Results:** Our preliminary results show that the mean value of Cu (*P* < .05) and Cp (*P* < .005) in patients with psychiatric disorders is lower than that of healthy subjects. Moreover, 18% and 40% of patients have values lower than normal reference range for iCp and Cu, respectively.

**Conclusion:** Among these subjects, WD patients with presentation of psychiatric symptoms could be hidden.