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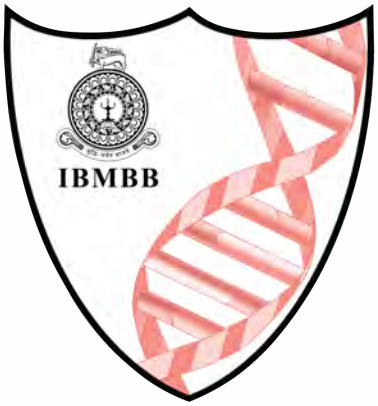

PP 07:

Influence of body mass index on the distribution of dyslipidemia in women affected with polycystic ovarian syndrome

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Dyslipidemia is a major metabolic disorder in women with Polycystic Ovarian Syndrome (PCOS), refers to abnormal blood lipid levels. An increase in Body Mass Index (BMI) is often associated with dyslipidemia, leading to cardiovascular disease. An analytical cross-sectional study with a convenient sampling method was used to investigate the influence of BMI on the distribution of dyslipidemia among women with PCOS. Women diagnosed with PCOS (125 nos) based on the Rotterdam criteria were recruited during their initial clinical visit to the Obstetrics and Gynaecology Clinic, Teaching Hospital, Jaffna. The blood samples (12h fasting) were analyzed for Total Cholesterol (TC), Triglycerides (TG), and High-Density Lipoprotein-Cholesterol (HDL-C). The Friedwald equation was used to calculate the Low-Density Lipoprotein-Cholesterol (LDL-C). Height and weight were measured and BMI was calculated. Ethical clearance was obtained from the Ethical Review Committee, Faculty of Medicine, University of Jaffna. Data was analyzed using SPSS version 25. In the total population, 6, 15, 44, and 60 were with underweight (<18.5 kg/m^2), normal (18.5 – 23.0 kg/m^2), overweight (23.0-27.5 kg/m^2), and obesity (≥27.5 kg/m^2), respectively. The mean BMI of the total population was 27.75 (±5.69) kg/m^2. Among the overweight PCOS women, 1.6, 16, 31.2 and 33.6% had abnormal TG (≥1.71 mmol/L), TC (≥5.18 mmol/L), HDL-C (<1.55 mmol/L), and LDL-C (≥2.60 mmol/L) levels respectively. Likewise in obese, 10.4, 20.8, 46.4 and 42.4% had abnormal TG, TC, HDL-C, and LDL-C levels respectively. TG levels showed positive correlation with BMI ($p = 0.001$), however HDL-C showed negative correlation ($p < 0.000$). The high prevalence of dyslipidemia (98.4%) was associated with a higher BMI, emphasizing need for monitoring the lipid profiles, mainly in overweight and obese women with PCOS, to reduce the risk of cardiovascular disease and inform targeted interventions.

Keywords: Body mass index; Dyslipidemia; Lipid profile; polycystic ovarian syndrome

PP 08:

Application of machine learning to predict gallstone related disease susceptibility via routine blood tests

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Typical diagnosis of gallstone disease relies on medical imaging supplemented by biochemical testing. We propose the development of a machine learning based predictive model using routine blood tests; alanine transaminase (ALT), high-density lipoprotein (HDL), triglycerides (TG), total cholesterol (TC), and fasting blood sugar (FBS) for diagnosis of gallstones. Data from 500 patients with and without gallstones and bile duct stones were processed using four algorithms; K-Nearest Neighbour, Random Forest, Decision Tree, and Naive Bayes, with performance of each algorithm compared based on parameters; accuracy, precision, recall, and F1 score. The Random Forest algorithm was optimal for predicting susceptibility to both gallstones and bile duct stones. An accuracy of 98% and a precision of above 97% indicated the model's ability to correctly classify positive cases. The model was robust yielding only one false positive result even with a training data set of 105 patients, and the rest used for validation and testing. This study highlights the ability of machine learning algorithms combined with routine blood tests for cost-effective and rapid risk assessment of individuals preemptively, enabling timely interventions and preventive measures to improve patient outcomes and quality of life. Training the machine learning model with more patient data will enable the application of results to a more generalizable and wider population.

Keywords: Gallstone disease, Machine Learning, Alanine Transaminase, High-Density Lipoprotein, Triglycerides