OP-07

CORRELATION OF AGGREGATED BETA AMYLOID LEVEL IN PLASMA WITH MoCA AND MMSE AMONG PATIENTS WITH TYPE 2 DIABETES WITH DEMENTIA

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INTRODUCTION
Type 2 DM as a risk factor for Alzheimer's disease (AD) has been studied in recent years; however, no clear evidence of association has been found. As potential biomarker for AD, plasma beta amyloid is likewise under study by researchers. We examined the correlation between plasma beta amyloid levels and cognitive function among type 2 DM patients with dementia as indicated by their neurocognitive assessment scores. This study hopes to devise a less invasive early detection of AD among patients with diabetes.

METHODOLOGY
In this cross-sectional study, 100 patients with type 2 DM and dementia underwent plain cranial CT scan, plasma beta amyloid, MMSE and MoCA. Patients were categorized as having vascular dementia using the NINDS-AIREN Criteria. Elevated plasma beta amyloid was used as biomarker for AD.

RESULTS
Among type 2 DM patients with dementia, there is an increased prevalence of AD (46.7%) as shown by the elevated beta amyloid level. The prevalence of vascular dementia is 6%. Among patients with non-vascular dementia, 51.3% have elevated beta amyloid. There is no significant correlation between both MMSE score and beta amyloid (r=-0.0192, p=0.8557), and between MoCA score and beta amyloid (r=0.0939, p=0.3731). The results do not show significant correlation between MMSE and MoCA scores with beta amyloid level among patients with AD.

CONCLUSION
Using the beta amyloid as biomarker, the study suggests a link between AD and type 2 DM, however, we recommend further researches to ascertain the use of plasma beta amyloid as a less invasive screening for AD among patients with diabetes.

KEY WORDS
diabetes mellitus, dementia, aggregated beta amyloid, Alzheimer's disease

OP-08

ROLE OF HYPOXIA-INDUCIBLE FACTOR 1A (HIF1A) ON INTERMITTENT HYPOXIA-INDUCED ADIPOSE TISSUE DYSFUNCTION IN TYPE 2 DIABETES MELLITUS

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INTRODUCTION
Obstructive sleep apnea (OSA) commonly coexists in type 2 diabetes mellitus (T2DM) patients, but the mechanism for this overlapping epidemic remains unclear. We hypothesized that the intermittent hypoxia (IH) in OSA leads to upregulation of hypoxia-inducible factor 1a (HIF1A) in adipose tissue (AT), leading to local fibrosis, inflammation, and macrophage infiltration. These contribute to insulin resistance and glucose intolerance in T2DM.

METHODOLOGY
We employed a combination of in vitro and in vivo approaches to investigate the role of HIF1A in OSA and T2DM. Cell and animal models were exposed to IH to simulate the hypoxic stress in OSA. The role of HIF1A was investigated through treatment with PX-478, a known HIF1A inhibitor.

RESULTS
IH exposure resulted in IL6-mediated inflammation in adipocytes and macrophage co-culture that was reversed by pre-treatment with PX-478. Further, TallyHo mice treated with PX-478 had markedly improved insulin sensitivity and glucose tolerance after IH challenge. These metabolic improvements were associated with decreased AT fibrosis, inflammation and macrophage infiltration. Trichrome stain indicated that collagen deposition was significantly reduced in AT of PX-478-treated TallyHo mice exposed to IH. We also found that the inflammatory markers IL6, TNFa and MCP1 were decreased in AT of PX-478-treated mice. Consistent with these, immunohistochemical staining confirmed lower frequency of macrophage infiltration in the PX-478 group.

CONCLUSION
Overall, we underscore the importance of HIF1A for the orchestration of pro-fibrotic and pro-inflammatory changes of the AT in response to IH, serving as a crucial link between OSA and the development of insulin resistance and glucose intolerance in T2DM.

KEY WORDS
obstructive sleep apnea, adipose tissue, diabetes

OP-09

CORRELATION STUDY BETWEEN ERYTHROCYTE ACETYLCHOLINESTERASE ACTIVITY, SERUM MALONDIALDEHYDE AND INSULIN SENSITIVITY IN AGRICULTURAL WORKERS AND NON-AGRICULTURAL WORKERS IN NAT-KAN VILLAGE, MAGWAY TOWNSHIP, MYANMAR

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INTRODUCTION
Many studies have indicated that organophosphate (OP) pesticides exposure was associated with hyperglycemia and development of type 2 diabetes mellitus in case studies and population studies. However, only few studies have examined the association between OP pesticides exposure and serum insulin level as well as insulin sensitivity.

OBJECTIVE
This study investigated the erythrocyte acetylcholinesterase activity, serum malondialdehyde and insulin sensitivity in agricultural workers and non-agricultural workers.

METHODOLOGY
The cross-sectional comparative study was undertaken in 45 agricultural workers and 45 non-agricultural workers from Nat-Kan village, Magway Township. Erythrocyte acetylcholinesterase (AChE) activity and serum Malondialdehyde (MDA) were measured by spectrophotometric method. Insulin sensitivity was calculated by Homeostasis model assessment (HOMA-IR).

RESULTS
Mean erythrocyte AChE activity was significantly lower in agricultural workers compared with non-agricultural workers (3553.99±855.60 U/L vs 4432.68±1287.86 U/L, $p<0.001$). A significant high level of serum MDA was observed in agricultural workers (0.74±0.05μmol/L vs 0.28±0.06 μmol/L, $p<0.001$). Median HOMA-IR value was significantly higher in agricultural workers [2.74 (2.37-3.3)] than that of non-agricultural workers [2.28 (2.03-2.78), ($p<0.05$)]. The risk of insulin resistance was 2.8 times greater in agricultural workers than non-agricultural workers (Odd ratio=2.8; 95% confidence interval=1.18 to 6.72). Erythrocyte AChE activity had weak negative correlations with serum MDA level (r=-0.357, n=90, $p<0.001$) and HOMA-IR (ϱ=-0.305, n=90, $p<0.05$). There was a significant positive correlation between serum MDA level and HOMA-IR (ϱ=0.355, n=90, $p<0.001$).

CONCLUSION
Organophosphate pesticides exposure decreased the erythrocyte AChE activity and increased oxidative stress. This oxidative stress partly attributed to the development of insulin resistance.

KEY WORDS
AChE activity, HOMA-IR, MDA level, organophosphate pesticides exposure, agricultural workers