

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

<https://doi.org/10.15605/jafes.034.02.S9>

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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±0.05 μmol/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 ($r=-0.305$, $n=90$, $p<0.05$). There was a significant positive correlation between serum MDA level and HOMA-IR ($r=0.355$, $n=90$, $p<0.001$).

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