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Association of adiponectin 1 and 2 receptors expression and opioid addiction

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Introduction & Aim: Opium addiction is one of the social and economic problems that many societies in the world are dealing with. Adiponectin is a collagen-like protein synthesized by white adipose tissue. Adiponectin exerts its effect by binding to two distinct adiponectin receptor 1 (AdipoR1) and adiponectin receptor 2 (AdipoR2). Low levels of adiponectin are associated with adverse metabolic states. Opioid addiction is related to endocrine and metabolic states too. This is the first study in opioid addicts that investigated relationship between morphine dose and expression level of adiponectin receptor genes. Moreover, effect of its expression level on serum glucose concentration, plasma triglyceride and other endocrine parameters especially weight loss were studied. Moreover the association between daily dose of morphine and expression level of these receptors and other factors such as lipid profile and fasting blood sugar were analyzed.

Materials & Methods: Whole blood samples were obtained from 100 morphine abusers; and 100 Normal patients as the control group. Heparinized human blood was diluted for isolation of leukocytes from whole blood and in order to the level of AR expression. The expression level of adiponectin was studied by flow cytometry and analyzed by FlowJow. We compare the levels of lipid profile and glucose with normal patients and also the association between daily dose of morphine and expression level of these receptors and other factors such as lipid profile and fasting blood sugar by statistical analysis.

Results: According to flow cytometry results the expression level of adiponectin receptors are significantly higher in opioid addicts.in addition, FBS and serum lipids were significantly lower in opioid abusers. However no significant difference was observed between FBS and lipid profile of abusers and expression of ARs with respect to their daily opium intake.

Conclusion: Our results indicate, for the first time, that gene expression of AR1 and AR2 are significantly higher in opioid abusers. This may justify the mechanism in which opioid abusers have lower serum glucose and lipids as well as lower BMIs. Regarding reports on association of increased AdipoRs in various hormone-dependent malignancies such as prostate, breast and endometrial cancers and results obtained from our study may suggest that individuals addicted to opium may also be more prone to different malignancies. Contrariwise, up regulation of AdipoRs may be a therapeutic strategy for treatment of obesity, diabetes and cardiovascular disease.

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