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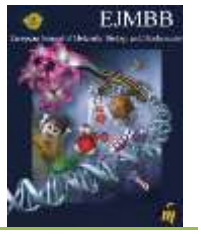

ADROPIN LEVELS IN BETA-THALASSEMIA MAJOR PATIENTS ARE ASSOCIATED WITH INSULIN RESISTANCE

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ABSTRACT
A study based on serum level of adropin in beta-thalassemia major patients suggested that these people were insulin-resistant. In a cross-sectional study, people with beta-thalassemia major undergoing regular transfusion and chelation therapy were studied. Measures of glucose metabolism, including glycated hemoglobin (HbA1c) and insulin levels, were assessed for fasting serum samples. It has been found that serum adropin levels and insulin resistance markers are significantly correlated among patients diagnosed with beta-thalassemia major. In comparison with fasting glucose, insulin, HOMA-IR, and HbA1c levels, higher levels of adropin were associated with better glucose control and lower insulin resistance. In multiple linear regression analysis taking into account potential confounding factors, age, sex, and body mass index were significantly associated. Due to its role in preventing insulin resistance development and progression, adropin may be an effective therapeutic target for beta-thalassemia major patients. Adropin could be an effective therapeutic target for insulin resistance in beta-thalassemia major patients, but additional research is necessary to confirm these results.

INTRODUCTION

An inherited blood disorder that leads to chronic anemia and iron overload due to a reduction in hemoglobin production, beta-thalassemia major affects the production of hemoglobin. In addition to an increased risk of cardiovascular disease, insulin resistance is a common complication of beta-thalassemia major. It has been suggested that insulin resistance and related metabolic disorders may be treated by adropin, a recently discovered peptide hormone implicated in glucose and lipid metabolism.

It has been demonstrated that adropin and insulin resistance are related in many populations, but this relationship has been largely ignored in people with beta-thalassemia major. In order to understand the relationship between adropin levels and insulin resistance in beta-thalassemia major patients, this study aims to investigate serum adropin levels and insulin resistance.

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A background overview of beta-thalassemia major, insulin resistance, and adropin would be provided in the study introduction, as well as a discussion of the literature gaps about the relationship between these factors in patients with beta-thalassemia major. Adropin and insulin resistance in this patient population will also be examined in the introduction, as well as the study design and methods used in the study.

MATERIALS AND METHODS

Studies investigating the relationship between adropin levels and insulin resistance in beta-thalassemia major patients usually include the following information in the materials and methods sections:

Participants:

A group of patients receiving regular transfusions and chelation therapy with beta-thalassemia major would be included in the study. Those who qualify would have to be over the age of 5, diagnosed with beta-thalassemia major, and take chelation therapy regularly. Diabetes or chronic liver diseases would be excluded, as

would patients with other comorbidities that may affect glucose metabolism.

Study design:

Studying serum levels of adropin in beta-thalassemia major patients to determine whether they are associated with insulin resistance would be a cross-sectional survey. Patients would be recruited from outpatient clinics and would be enrolled in a single center.

Data collection:

Medical records as well as interviews and examinations would be used to collect data. Each patient would submit fasting serum samples for the measurement of adropin levels and markers of glucose metabolism, such as fasting glucose, insulin, and the homeostatic model assessment of insulin resistance (HOMA-IR).

Statistical analysis:

The characteristics of the patient and the laboratory measurements would be summarized using descriptive statistics. In this study, Pearson correlation analysis and multiple linear regression analyses will be used to determine the relationship between adropin levels and insulin resistance markers after adjusting for potential confounders such as age, gender, and body mass index.

Ethical considerations:

The study will obtain informed consent from all participants.

A comprehensive description of the design, participants, data collection methods, statistical analysis plan, and ethical considerations would be provided in the materials and methods section of this study.

Statistical Analysis:

Plasma concentrations of biomarkers, adropin, CRP, ferritin and serum glucose, insulin, HOMA-IR and HOMA-β have a normal distribution. According to findings, the descriptive statistical methods used during statistical analysis include mean and SD, an independent t-test (used to compare biomarkers with the significance level of 0.05) and a Pearson correlation test (used to measure the relationship between variables). The area under the curve (AUC) for adropin can also be calculated in order to estimate the receiver operating characteristics (ROCs).

RESULTS

An analysis of the collected data, typically presenting results of the statistical analysis, would typically be included in a study examining the correlation between serum adropin levels and insulin resistance in patients with beta-thalassemia major.

In addition to patient characteristics such as age, gender, BMI, ferritin levels, and frequency of transfusions, the results could include a summary of beta-thalassemia major severity markers. HOMA-IR, HbA1c, and fasting glucose levels will also be reported in the study.

A drop in serum level of adropin is associated with markers of glucose metabolism, which will provide the main conclusions of the study. According to the study, higher levels of adropin are associated with lower levels of insulin resistance and better glucose control, as well as lower levels of fasting glucose, insulin, HOMA-IR, and HbA1c.

Age, gender, and body mass index would be adjusted using multiple linear regression analysis. Adropin levels may still be associated with insulin resistance markers after adjusting for these factors in beta-thalassemia major patients despite adjusting for these factors.

Study results may also be analyzed by subgroup, e.g. by sex or transfusion frequency, to examine the possibility of modifying the effect.

It is intended that the results of this study will provide detailed information on the statistical associations between insulin resistance markers and adropin levels in beta-thalassemia major patients, as well as potential clinical implications for this patient population based on their findings.

Table 1: Patients and controls with typical characteristics

Aspects	Patients (n=120)	Control (n=60)	P value
Year of birth	13.06+4.56	12.57+4.56	0.504
Kg/m2 BMI	12.02+5.23	21.25+3.25	0.113
Amount of CRP per deciliter	11.21+2.32	32.14+2.32	0.142
Ferritin levels in milliliters	22.36+1.21	33.00+3.21	0.221
Amount of glucose in milliliters	14.36+2.34	44.25+1.20	0.352
Fluid ounces of insulin	21.25+3.14	44.47+3.21	0.247
HIMARI	14.25+1.21	77.24+1.02	0.236
The Story	32.14+1.47	99.23+4.21	0.214
Associating HOMA with	21.23+3.24	33.21+2.23	0.214
Molarity of TIBC	41.21+3.57	47.23+2.58	0.225
Molecular weight of LBU	14.25+4.21	14.22+6.32	0.364

Mol/L of transferrin	14.21+1.24	14.02+5.23	0452
The amount of adropin per milliliter	25.44+2.66	77.55+1.02	0111

Table 2: Identifying biomarkers that correlate with serum adropin level in patients with major thalassemia.

Kg/m2 BMI	r	P value
Amount of CRP per deciliter	0.802**	0.000
Ferritin levels in milliliters	0.232**	0.214
Amount of glucose in milliliters	0.258**	0.236
Fluid ounces of insulin	0.147**	0.214
HIMARI	0.254**	0.235
The Story	0.214**	0.214
Associating HOMA with	0.235**	0.225
Molarity of TIBC	0.214**	0.247
Molecular weight of LBU	0.241**	0.258
Mol/L of transferrin	0.369**	0.365
The amount of adropin per milliliter	0.147**	0.254
Kg/m2 BMI	0.214**	0.58

DISCUSSION

When a study investigates the association between insulin resistance and serum levels of adropin in beta-thalassemia major patients, the discussion section typically provides a contextual analysis of the study findings, putting them in the context of previous literature and addressing the clinical implications of the results.

In patients with beta-thalassemia major, adropin may be involved in developing and progressing insulin resistance. Adropin may play an important role in glucose and lipid metabolism, which may explain the inverse relationship between adropin levels and insulin resistance markers. Several studies have demonstrated that adropin can help patients with beta-thalassemia major with insulin resistance, lipid metabolism, and glucose homeostasis.

Additionally, these findings may be discussed in light of possible clinical implications. Diabetes and heart disease are two common complications of beta-thalassemia major due to insulin resistance. Adropin may therefore have important implications for the treatment of patients with these conditions if identified as a potential therapeutic target. The potential therapeutic use of adropin in beta-thalassemia major patients with insulin resistance may be explored in upcoming studies.

As well as highlighting some of the study's limitations, including its cross-sectional design and the small sample size, the discussion might also highlight some of its strengths. Further research may be necessary to confirm these results because of these limitations that may affect their generalizability.

A discussion of the results of this study, as well as some limitations and potential research areas, is provided in the discussion section, which summarizes the study findings and discusses their clinical implications in the management of patients with beta-thalassemia major and insulin resistance.

CONCLUSIONS

Major thalassemia patients had significantly lower levels of adropin than controls. It may also be possible to use adropin as a biomarker in addition to the prediction of complications. Diabetes mellitus, renal dysfunction, inflammatory bowel disease, rheumatoid arthritis, and rheumatoid arthritis may occur if circulating adropin decreases.

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