行政院國家科學委員會專題研究計畫 成果報告

幽門桿菌感染和血漿中 ghrelin 與 leptin 值對經腹腔鏡減肥手術的術後體重結果影響

研究成果報告(精簡版)

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The Influence of Helicobacter pylori infection and plasma levels of ghrelin and leptin on the postoperative body weight outcomes of laparoscopic bariatric surgery

計畫類別：■個別型計畫　□整合型計畫

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中 文 摘 要

背景：肥胖已成為全球重要的公衛和健康議題，隨著外科治療肥胖的使用增加，臨床醫師必須對此類患者術前、術中和術後的相關問題有一定程度的了解，以便提供適當的處理。雖然減肥手術的成功與發炎介質的減少有關，但是胃內最重要的發炎病因－幽門桿菌感染對於最終手術結果顯響的資料卻極為有限。最近的研究已發現 ghrelin 和 leptin 濃度的改變可能與不同減肥手術的預後有關，然而這些結果並不一致，而且並無同時針對幽門桿菌感染和不同型式 ghrelin 的動態變化在此類病人影響的研究報告。

病人和方法：68 位接受腹腔鏡胃部繞道手術(LMGBP)的患者，測量手術前(M0)、術後一個月(M1)、三個月(M3)、六個月(M6)、十二個月(M12)的系列血中 leptin 和 ghrelin 濃度變化，並分析與體重減輕間的相關性。

結果：leptin 值在 M1, M3, M6 及 M12 明顯較 M0 為低($p<0.001$)，但是 ghrelin 值則在術後與術前未見明顯改變。經多因子分析後發現術後 12 個月的 excess BMI loss(%EBL)與術前高 ghrelin 濃度($p=0.004$)和前高術 BMI($p=0.002$)呈負相關。

結論：接受腹腔鏡胃繞道手術減重之患者，術前較高的 ghrelin 濃度和較大的 BMI 值，可做為術後 12 個月%EBL 的預測參考。

關鍵詞：胃繞道手術、肥胖、ghrelin、leptin、體重減輕、預測因子。

Abstract

Background: Obesity has become a major public health problem of global significance. With the increased use of surgical treatment for obesity, it is imperative for clinicians to familiarize relevant issues for providing optimal management of patients before, during and after these operations. The success of weight loss surgery is related to the reduction of inflammatory mediators but data regarding the influence of H. pylori, the most important etiologic factor of gastric inflammation, on eventual weight outcomes following bariatric surgery are scarce. Recent researches have documented that changes in ghrelin and leptin levels following bariatric surgery have offered an explanation for weight-reducing effects in different kinds of operation. However, the results are inconclusive and no studies have looked at the impact of H. pylori and dynamic alterations of various forms of ghrelin in this special subset of patients.

Patients Methods: Serial fasting serum leptin and ghrelin concentrations were measured in 68 morbidly obese patients before (M0) and 1(M1), 3(M3), 6(M6), and 12(M12) months after LMGBP surgery. The correlations between ghrelin, insulin and leptin concentrations and weight reduction were analyzed.

Results: The leptin levels wre significantly reduced at 1,3,6 and 12 months after surgery, respectively (vs. M0, $p<0.001$), whereas the ghrelin concentrations were not significantly changed after surgery. The percent of excess BMI lost (%EBL) 12 months after surgery was negatively correlated with higher preoperative ghrelin concentrations ($p=0.004$) and larger preoperative BMI ($p=0.002$)in the multivariate anlaysis.

Conculsion: Higher preoperative ghrelin concentrations and larger BMI are predictive of less %EBL at 12 months after LMGBP surgery.

Keywords: gastric bypass, obesity, ghrelin, leptin, weight loss, predictor.

Table 1. Anthropometric, biochemical parameters, and hormonal levels before and after LMGBP

	Before LMGBP	3 months	6 months	12 months
Age (yr)	31.6±8.9	-	-	-
Body height (cm)	164.3±7.6	-	-	-
Hip circumference (cm)	126.7±15.8	-	-	-
Waist circumference (cm)	113.2±18.1	100.7±16.8 [a]	96.3±14.3 [a]	87.9±12.5 [a]
Body weight (kg)	108.0 ±22.8	89.3±20.3 [a]	81.9±18.5 [a]	74.4±15.5 [a]
BMI (kg/m^2)	39.7± 7.2	32.9±6.3 [a]	30.2±5.7 [a]	27.45±4.8 [a]
Systolic pressure (mm Hg)	131.3±18.2	133.6±22.6	126.4±24.1	121.1±15.5 [b]
Diastolic pressure (mm Hg)	83.3±11.4	77.9±13.9 [b]	76.0±21.5 [c]	70.7±11.9 [a]
Fasting glucose (mg/dL)	101.2±29.1	84.0±8. 6 [a]	81.7±5.9 [a]	81.2±6.2 [a]
Triglycerides (mg/dL)	143.3±94.1	110.1±42.5[a]	88.7±27.5[a]	71.6±21.1[a]
HDL cholesterol (mg/dL)	46.7±11.8	39.2±9.8 [a]	43.7±11.4 [b]	52.1±10.4 [a]
Total cholesterol (mg/dL)	194.5±36.8	166.9±35.6 [a]	154.0±27.2 [a]	149.2±29.4 [a]
C-reactive protein	0.53 ± 0.50	0.23±0.25	0.25±0.41	0.35±1.73
Ghrelin (pmol/liter)	18.7 ±7.9	17.2±4.9	18.1±5.9	17.2±5.5
Leptin (ng/ml)	25.6 ±10.4	11.2±7.7 [a]	8.3±5.3 [a]	6.4±4.2 [a]
Insulin (μU/ml)	18.2±13.1	5.8±5.5[a]	4.7±2.6 [a]	4.0±2.4 [a]
HOMA index	81.1±55.5	22.5±25.8 [a]	17.1±10.0 [a]	14.2±8.8 [a]

LMGBP: laparoscopic mini-gastric bypass; BMI: body mass index; HDL: high-density lipoprotein; HOMA: homeostasis model of assessment. [a] p <0.001, [b] p <0.01, [c] p <0.05 vs. baseline.

Table 2. Multivariate regression analysis of the correlations between change in fasting hormonal concentrations and changes in body weight after surgery

		% Δ body weight		
		Δ M0-M3	Δ M0-M6	Δ M0-M12
ΔGhrelin	correlation coefficient	-0.264	-0.222	-.0171
	p-value	0.043	0.109	0.150
ΔLeptin	correlation coefficient	0.074	0.399	0.433
	p-value	0.564	0.004	0.001
ΔInsulin	correlation coefficient	0.289	0.105	0.091
	p-value	0.027	0.431	0.439

The data had been adjusted for age, gender, and preoperative body mass index. Δ: changes in body weight and hormonal levels; M0: before surgery; M3: 3 months after surgery; M6: 6 months after surgery; M12: 12 months after surgery.

Table 3. Multivariate regression analysis of correlations between preoperative characters and %EBL and %EWL 12 months after surgery

	%EBL		%EWL	
	correlation coefficient	p-value	correlation coefficient	p-value
Age	0.030	0.783	-0.019	0.857
Gender	0.064	0.699	0.102	0.524
BMI	-0.633	0.002	-0.703	<0.001
Waist-Hip Ratio	-0.105	0.404	-0.083	0.495
Diabetes Mellitus	-0.177	0.217	-0.078	0.570
Hypertension	-0.124	0.290	-0.106	0.344
C-reactive protein	0.143	0.334	0.121	0.393
Ghrelin	-0.364	0.004	-0.414	0.001
Leptin	-0.035	0.813	0.049	0.734
Insulin	-0.044	0.705	-0.013	0.910

%EBL: percent of excess body mass index lost; %EWL: percent of excess weight loss; BMI: body mass index.

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