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Original article

Prospective Study of Gluco-lipidic Hormone and Peptide Levels in Morbidly Obese Patients After Sleeve Gastrectomy[☆]



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ABSTRACT

Introduction: Different hormones and peptides involved in lipid and carbohydrate metabolism have been studied in relation to morbid obesity and its variation after bariatric surgery. The aim of this study is to evaluate variations in different molecules related to gluco-lipidic metabolism during the first year after sleeve gastrectomy in morbidly obese patients.

Materials and methods: This is a prospective study in patients undergoing sleeve gastrectomy between November 2009 and January 2011. We analysed changes in different clinical, anthropometric and analytic parameters related with gluco-lipidic metabolism in all patients in the preoperative period, first postoperative day, fifth day, one month, 6 months and one year after surgery. Statistical analysis was performed using SPSS 20.0.

Results: We included 20 patients, 60% were women with a median age of 45 years and the median of body mass index (IMC) was 48.5 kg/m², 70% had obstructive sleep apnea syndrome (SAOS), 65% arterial hypertension (HTA), 45% dyslipidemia and 40% diabetes mellitus. One year after surgery, the percentage of excess of BMI loss was 72% and the rate of cure or improvement of dyslipidemia was 100%, diabetes 87.5%, HTA 84.6% and SAOS 57.1%. At this time, glycemia levels decreased significantly ($P<.001$), and levels of IGF-1 and HDL-cholesterol increased significantly. Levels of adiponectine increased and those of leptine ($P=.003$), insulin ($P=.004$) and triglycerides ($P=.016$) decreased significantly one year after the surgery. ACTH levels (that decreased during first 6 months after surgery), glycosylated haemoglobin, total cholesterol and LDL-cholesterol had no changes one year after surgery. **Conclusions:** Sleeve gastrectomy is a surgical technique with good results of weight loss and cure of comorbidities. This procedure induces significant modifications in blood levels of gluco-lipidic metabolism related peptides and hormones, such as glucose, IGF-1, insulin, leptin, triglycerides and HDL-cholesterol.

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Estudio prospectivo de los valores de hormonas y péptidos relacionados con el metabolismo glucolipídico en pacientes obesos mórbidos sometidos a una gastrectomía vertical

RESUMEN

Palabras clave:

Obesidad

Gastrectomía vertical

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Introducción: Diferentes hormonas y péptidos implicados en el apetito y el metabolismo lipídico e hidrocarbonado se han estudiado en relación con la obesidad mórbida y su variación tras cirugía bariátrica. El objetivo de nuestro trabajo es evaluar las variaciones de diferentes moléculas relacionadas con el metabolismo glucolipídico durante el primer año tras una gastrectomía vertical en pacientes obesos mórbidos.

Material y método: Estudio prospectivo en pacientes operados mediante gastrectomía vertical entre noviembre de 2009 y enero de 2011. Se determinaron y analizaron las variaciones en diferentes parámetros clínicos, antropométricos y analíticos relacionados con el metabolismo glucolipídico en todos los pacientes en el preoperatorio, al primer y quinto días, al mes, a los 6 meses y al año postoperatorio, realizando el estudio estadístico con ayuda del programa SPSS 20.0.

Resultados: De los 20 pacientes estudiados, el 60% eran mujeres con una mediana de edad de 45 años. La mediana del índice de masa corporal (IMC) preoperatorio fue de 48,5 kg/m² y el 70% padecían síndrome de apnea obstructiva del sueño (SAOS), el 65% hipertensión arterial (HTA), el 45% dislipidemia y el 40% diabetes mellitus. Al año de la cirugía, el porcentaje de exceso de IMC perdido fue del 72% y la tasa de curación o mejoría de la dislipidemia fue del 100%, de diabetes el 87,5%, de HTA el 84,6% y de SAOS el 57,1%. En ese período los niveles de glucemia en ayunas disminuyeron de forma significativa ($p < 0,001$), mostrando los niveles de IGF-1 y colesterol HDL un aumento significativo. Los niveles de adiponectina aumentaron y los de leptina ($p = 0,003$), insulina ($p = 0,004$) y triglicéridos ($p = 0,016$) disminuyeron de forma significativa al año de la intervención. Los valores de ACTH (que disminuyeron durante los 6 primeros meses), hemoglobina glucosilada, colesterol total y LDL no experimentaron cambios significativos al año de la intervención.

Conclusión: La gastrectomía vertical es una técnica que presenta buenos resultados ponderales y de curación de comorbilidades, produciendo modificaciones significativas durante el primer año postoperatorio en los niveles sanguíneos de diferentes parámetros relacionados con el metabolismo glucolipídico como la glucosa, IGF-1, insulina, leptina, triglicéridos y colesterol HDL.

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Introduction

Genetic, environmental and educational factors have been implicated in the development of morbid obesity. There are various alternative approaches to finding a cure, and bariatric surgery has shown the best long-term results. Sleeve gastrectomy has boomed over the past decade and is currently one of the most frequently-used bariatric techniques,¹ as it has demonstrated weight-loss outcomes and a cure of comorbidities over and above required standards.

Several studies on morbid obesity have demonstrated how there are many peptides and hormones influencing appetite regulation and lipid and hydrocarbon metabolism and how they change in patients who have undergone bariatric surgery.²

The objective of our study is to determine possible hormone and peptide changes related to glycolipid metabolism in morbidly obese patients who have undergone sleeve gastrectomy.

Materials and Methods

We performed a prospective, descriptive and analytical study on a total of 20 morbidly obese patients who underwent laparoscopic sleeve gastrectomy in our centre between November 2009 and January 2011.

All the patients fulfilled the indication criteria for bariatric surgery with a body mass index (BMI) above 40 kg/m² or above 35 if associated with other comorbidities. All were informed about the characteristics of the study and signed a specific consent form in order to participate in it.

The surgical technique was performed by the same surgical team, which included 4 surgeons with expertise in bariatric surgery. The surgical approach was laparoscopic using 5 trocars. After releasing the greater gastric curvature, the gastrectomy was performed from 4.5 cm in the region proximal to the pylorus up to the angle of His on a 36 Fr intragastric catheter. The integrity of the section line was tested intraoperatively, instilling methylene blue through a

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