糖尿病患者において厳密なカロリーダイエットは心機能を改善する(Abstract＃SSE04-06)

心臓MRIにより2型糖尿病患者の代謝治療の効果が有効に定量化できた

Cardiac MRI effectively quantifies effects of metabolic intervention in patients with type 2 diabetes

肥満の2型糖尿病患者において低カロリーダイエットは、インスリン依存性を低下させ心膜の脂肪減少に伴い左室拡張機能を持続的に改善させる、と2011年Radiological Society of North America学会で発表された。研究者らは、2型糖尿病患者15人―男性7人、女性8人―の心機能および心膜の脂肪を、4ヵ月間にわたる1日500カロリーの食餌療法の前後に心臓MRIを用いて解析した。4ヵ月間のカロリー制限によりボディマスインデクス(BMI)は35.3から27.5に低下した。心膜の脂肪は39ミリリッター(ml)から31mlに減少し、心拡張能の指標であるE/A比は0.96から1.2に改善した。16週後にはインスリンが必要な患者はいなかった。通常食でさらに14ヵ月間追跡したところ、BMIは31.7に上昇したが心膜の脂肪は32mlにやや増加したのみであった。経過観察後のE/A比は1.06であった。体重が再増加したにもかかわらず、これらの心血管系への好ましい効果は長期間にわたり持続していた。これらの結果から、このような治療法に画像診断法を含めることの重要性が強調されると研究者らは述べている。

Full Text

A low-calorie diet eliminates insulin dependence and leads to sustained improvement in heart function in obese patients with type 2 diabetes mellitus, according to a study presented at the 2011 annual meeting of the Radiological Society of North America.

"Lifestyle interventions may have more powerful beneficial cardiac effects than medication in these patients," said the study's lead author, Sebastiaan Hammer, M.D., Ph.D., from the Department of Radiology at Leiden University Medical Center in the Netherlands. "It is striking to see how a relatively simple intervention of a very low calorie diet effectively cures type 2 diabetes mellitus. Moreover, these effects are long term, illustrating the potential of this method."

Pericardial fat can be detrimental to cardiac function, especially in people with metabolic disease. Dr. Hammer and colleagues set out to determine the long-term effects of initial weight loss induced by caloric restriction on pericardial fat and cardiac function in obese patients with type 2 diabetes.

Using cardiac MRI, the researchers analyzed cardiac function and pericardial fat in 15 patients-including seven men and eight women-with type 2 diabetes before and after four months of a diet consisting of 500 calories daily. Changes in body mass index (BMI) were also measured.

The results showed that caloric restriction resulted in a decrease in BMI from 35.3 to 27.5 over four months. Pericardial fat decreased from 39 milliliters (ml) to 31 ml, and E/A ratio, a measure of diastolic heart function, improved from 0.96 to 1.2.

After an additional 14 months of follow-up on a regular diet, BMI increased to 31.7, but pericardial fat only increased slightly to 32 ml. E/A ratio after follow-up was 1.06.

"Our results show that 16 weeks of caloric restriction improved heart function in these patients," Dr. Hammer said. "More importantly, despite regain of weight, these beneficial cardiovascular effects were persistent over the long term."

Dr. Hammer pointed out that these findings stress the importance of including imaging strategies in these types of therapy regimens.

"MRI clearly showed all the changes in fat compartments, structural changes in the heart and improvements in diastolic function, making it a very effective method of quantifying the effects of metabolic interventions," he said.

While these results are promising, not all patients are eligible for this type of therapy. Patients should consult with their doctors before embarking on any type of reduced calorie diet.

"It is of utmost importance to follow such a complicated intervention under strict medical supervision," Dr. Hammer said, "especially as patients may be able to stop all anti-diabetic therapy from Day 1."

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