GLP-1 Agonists Effects on Weight Loss in Those With and Without Diabetes

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Background

Obesity and T2DM are significant public health concerns, both increasing in prevalence yearly. GLP-1(glucagon like peptide) receptor agonists are used for glucose lowering therapies in patients with T2DM, with the additional benefit of weight loss. GLP-1 agonists work on peripheral and central mechanisms such as appetite, food intake, and glycemic control. This is achieved by activation of the ileal brake, delay in gastric emptying, increase in glucose-dependent insulin release, decrease in glucagon secretion, and an increase in pancreatic beta cell growth. The CNS is also affected by acting on the parietal and orbitofrontal cortex to reduce appetite. [3]

Purpose

To explain the importance of GLP-1 agonists in terms of glycemic control, decrease in diabetes related complications, and benefits such as weight loss.

PICOT

In adult patients with type 2 diabetes, how effective are GLP-1 agonists compared to adult patients without type 2 diabetes for weight loss?

Design & Methods

Keywords: GLP-1 agonists, weight loss, obesity, type 2 diabetes

Inclusion: adults >18 years old, T2DM

Exclusion: Studies older than 5 years old, data involving type 1 diabetes over T2DM, studies involving subjects with a BMI <27, and studies involving those under the age of 18.

Table 1: Summary of Evidence Searched

Database	Yielded	Reviewed	Included in Analysis
Summon	3,500	10	2
PubMed	470	15	6
ScienceDirect	14,146	17	2
Total:	18,116	42	10

Table 2: Synthesis of Evidence

Level of Evidence	Included in Analysis
Meta Analysis	3
Retrospective cohort study	1
Narrative Review	1
Systematic Review	2
Other scholarly journals	3

Table 3: Results of Research

	Obese + T2DM	Obese
Liraglutide 1.8 mg	1.5 kg	
Liraglutide 3 mg		5.9 kg
	Weight loss vs placebo	**% subjects losing >5% of body weight**
Semaglutide		
T2DM	6.20%	68.8%
Obese nondiabetics	10.3-17.4%	86.4-88.7%
Liraglutide		
T2DM		Initially >35% from 51.8% to 54.3%, <5% after 1 year
Obese nondiabetic	3.4-6.1%	50.5-73%

Discussion:

Obese patients with either a BMI >30 or a BMI >27 with comorbidities who did not have T2DM, were found to have greater weight loss than those with obesity and with T2DM across all studies compared. Not only was the mean difference in those without diabetes and the placebo group much higher than those with T2DM but also the proportion of patients who lost >5% of their baseline body weight was found to be higher than those with obesity and T2DM by at least 13%, sometimes up to 36%.

Limitations/Further study:

The limitations for this topic was similar across all studies. Age, besides being over the age of 18, was not considered. Different age groups could have different results since elderly patients typically have more comorbidities. Gender was also not a factor that was considered. Although T2DM symptoms and treatments are typically the same in men and women, this still could have altered the results. Race was also not taken into consideration which could have skewed the overall results. The research that was conducted for this paper did show that weight loss with a GLP-1 agonist in those with obesity without T2DM was greater than those with obesity with T2DM. The reasoning for this is still unclear though, so future research on these medications could help determine why the results are not the same.

Conclusion:

GLP-1 agonists have been proven to be effective in the management of type 1 diabetes and weight loss through many different research studies and comparisons. GLP-1 agonists will likely become increasingly popular over the years due to the minimal side effects and statistically significant results. GLP-1 agonists have been found to control glucose, decrease diabetes related complications, and have the added benefit of weight loss.[6]

References:

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