WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Comparative Study of Metformin and Tirzepatide for Type 2 Diabetes Mellitus

[1] Jagadeeswaran. K, [2] Gopinath. S

[1,2] B. Pharmacy 4th Year, Pallavan Pharmacy College, Kolivakkam, Kanchipuram.

ABSTRACT

The treatment of type 2 diabetes mellitus (T2DM) involves the use of either metformin or tirzepatide, which are two separate medications. First line: Metformin increases sensitivity to the hormone insulin and reduces hepatic glucose production. Insulin secretion is stimulated by the dual GIP/GLP-1 receptor agonist, and glucagon release is suppressed, leading to weight loss. The evaluation evaluates the therapeutic benefits and drawbacks of metformin and tirzepatide for T2DM treatment, comparing their effectiveness, safety, and clinical implications. It also examines their impact on glycemic control, weight management, cardiovascular risk factors, as well as adverse event profiles. The review also explores the potential benefits of using both metformin and tirzepatide in T2DM treatment, and their roles in treating the disease. Furthermore, the analysis evaluates the clinical evidence supporting the use of tirzepatide in patients with inadequate glycemic control on metformin, and vice versa. Additionally, implications are provided for the findings and how tirzenpati drug interactions can help with unmet needs in T2DM management, including weight loss and cardiovascular risk reduction. The aim of this review is to provide a comprehensive evaluation of the safety and efficacy of metformin and tirzepatide for T2DM treatment, with implications for future research and treatment choices.

KEY WORDS : Dual GIP/GLP-1 receptor agonist, Weight management, T2DM management, Hepatic glucose production.

Profile of Medications

Metformin

- The first step towards treating type 2 diabetes.'
- Positional, appropriate for children as young as ten.
- Its function is to boost insulin sensitivity and decrease glucose uptake from food.'".
- Commonly well-managed with a prolonged safety record.'

Figure 1 : Metformin Tablets

Tirzepatide

- An injectable drug called Munjaro that has been approved for adults is now available.

- Impacts as both a GLP-1 and GIP receptor agonist.
- Celerates glucose production in the liver and boosts insulin secretion.'
- Identified as having significant weight loss advantages.

Figure 2 :Tirzepatide Injection

Efficacy in Blood Sugar Control

A1C Reduction

Tirzepatide: A1C levels are typically reduced by 2% with the use of Tirzepatide.

Metformin: Metformin helps to lower A1C levels by 1% and up to 1.5%.

Tirzepatide is more effective than metformin in lowering blood glucose levels.

Weight Management

Tirzepatide

- .Evidences substantial weight loss, with research indicating that there is a decrease of up to 20.9% after 72 weeks.
- To help people with obesity or those trying to lose weight

Metformin

- Generally weight-neutral, with some patients experiencing mild weight loss.
- Not primarily indicated for weight management.

Safety and Side Effects

Metformin

- Usually, the weight is not an issue for patients, but some patients may lose a little more than usual.
- Not primarily used to control weight.

Tirzepatide

- Side effects, particularly during initial treatment, may include nausea, vomiting and diarrhea.
- Having moderate susceptibility to hypoglycemia and uncommon kidney damage.
- More severe gastrointestinal side effects than metformin.

Patient Considerations

Accessibility and Cost.

Many patients now prefer metformin due to its affordability and accessibility.

Due to its recent advancements, tirzepatide is typically given through injection and may result in higher costs.

Treatment Goals.

- The initial recommendation for treatment is often met with metformin, particularly for individuals who do not require significant weight loss.
- Those seeking weight loss and improved glycemic control may find tirzepatide to be the better choice.

Combination Therapy.

- Both drugs can be used together to improve glycemic control and weight management.'
- The risk of gastrointestinal side effects may increase when they are combined.

Conclusion

The treatment options for type 2 diabetes are not uniform and differ in patient preferences, although both metformin and tirzepatide offer benefits in weight loss and blood sugar regulation.

REFERENCE

- Type 2 diabetes mellitus: a review of current trends-Abdulfatai B Olokoba, Olusegun A Obateru, Lateefat B Olokoba
- An overview of metformin in the treatment of type 2 diabetes mellitus-Mayer B Davidson, Anne L Peters
- fficacy of metformin in patients with non-insulin-dependent diabetes mellitus-Ralph A DeFronzo, Anita M Goodman, Multicenter Metformin Study Group
- Tirzepatide: a review in type 2 diabetes-Nicole L France, Yahiya Y Syed