



Received: 15 September, 2021

Accepted: 23 September, 2021

Published: 24 September, 2021

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## Perspective Study

# Vildagliptin–Metformin: Is it a causative of cardiac muscle failure in Type 2 Diabetic patients?

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## Introduction

Vildagliptin is an oral anti-hyperglycaemic agent, commonly called an anti-diabetic medication that belongs to the family of medications known as Dipeptidyl Peptidase-4 (DPP-4) inhibitors. It is a medicine that is used to treat Type 2 Diabetes Mellitus [1]. It inhibits the inactivation of Glucagon-Like Peptide (GLP-1) and Gastric Inhibitory Polypeptide (GIP) by DPP-4, allowing GLP-1 and GIP to potentiate the secretion of insulin in the beta cells and suppress glucagon release by the alpha cells of the islets of Langerhans in the pancreas [2]. This results in a reduction of hyperglycemia in T2DM [3]. Vildagliptin has been shown to reduce hyperglycaemia in type 2 diabetes mellitus. It does this by stimulating the pancreas to produce more insulin and by inhibiting the production of hormones that contribute to an increase in blood sugar levels. This lowers the amount of sugar in the blood both before and after a meal [4]. The combination of metformin and Vildagliptin is said to be an approved drug as an oral treatment for type 2 diabetes [5].

## Adverse effects

According to clinical trials, the use of DPP-4 inhibitors such as Vildagliptin has been associated with adverse effects such as nausea, hypoglycemia, tremors, headache, and dizziness [6]. However, hepatotoxicity has been reported to be rare [6].

There have been reports of pancreatitis associated with the use of DPP-4 inhibitors, and some studies have noted the presence of precancerous pancreatic changes in rats and organ

donors treated with these drugs [6]. However, claims of a causal relationship between incretin-based drugs and pancreatic cancer or pancreatitis are not supported by the available data, according to renowned agencies that have conducted reviews of the clinical and preclinical evidence [6].

Although the FDA and the EMA have not yet determined whether there is a causal relationship between DPP-4 inhibitors and pancreatitis or pancreatic cancer, they are both looking into the potential safety warning [6]. Therefore, until further information is available, pancreatitis remains a risk for individuals with type 2 diabetes who are taking DPP-4 inhibitors such as Vildagliptin [6].

## Substantial perspective

Can we hypothesize that there could be a relationship in which they will be contributors to myocardial damage, ventricular dyssynchrony, atrial fibrillation, arrhythmia, and other heart conditions if there are case reports that imply that the DPP-4 inhibitors are the perpetrators? Yes, say some studies [7].

This point of view is being brought to light due to the condition that is currently being experienced by a patient who is of potential interest in the event that an unexpected emergency arises. Vildagliptin was recently recommended to the patient; [Age and comorbidities: gender (female), Age of the patient: 61 (at present). Previously, the patient had undergone vaginal hysterectomy (at age 41) and cholecystectomy (at age 57); she has been declared type-2 diabetic since 2003]. This

case is interesting because the condition got worsened after the patient's anti-diabetic drug was changed from Glipizide 5 mg to Metformin (500 mg) + Vildagliptin (50 mg). This change was prescribed by an endocrinologist after the first hyponatremia shock caused by their long-term Type-2 Diabetes Mellitus. This T2DM patient is interesting because their condition got worse after their anti-diabetic drug was changed to Metformin (500 mg) + Vildagliptin (50 mg).

The problem was treated, and the patient was in excellent health until the second unexpected deterioration of acute sickness, which included renal failure, pulmonary oedema, and cardiac damage, and was related to increasing creatinine levels. As a result of this, the author asked the scientific community to get some trials going in order to determine whether or not using DPP-4 inhibitors as anti-hypoglycaemic medications are associated with harm to the myocardial tissue [7].

## Conclusion

In conclusion, even though the patient's case report has not been disclosed in its entirety, it is absolutely necessary for editors, scientific groups, administration bureaus, and other organizations to take into consideration the information that has been presented above and to conduct additional research in accordance with these considerations. There are concerns regarding the ambiguous investigations conducted during the clinical trials of the prescription medication, specifically in relation to its potential for adverse reactions such as pancreatitis and damage to the tissue of the myocardium. These concerns are highlighted in references 8 and 9 and they have been brought to the attention of the reader. Because of this, it is essential to do a thorough analysis of the advantages and disadvantages of giving this drug to patients, particularly those who have a previous history of pancreatitis or cardiovascular illness.

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