

Teneligliptin-induced hair loss: A case report

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ABSTRACT

Diabetes mellitus (DM) refers to a group of common metabolic disorders that share the common phenotype of hyperglycemia secondary to various pathophysiologic mechanisms that include reduced insulin secretion, decreased glucose utilization, and increased glucose production. Individuals suffering from Type 2 DM (T2DM) tend to be at a higher risk for the development of both micro as well as macrovascular complications. Management strategy includes an armamentarium of drugs and lifestyle modifications. 35 years old male diagnosed with T2DM was started on a fixed-dose combination of 20 mg Teneligliptin and 1 g metformin once daily. After consuming this dose for a month, he observed no reduction in his blood sugar levels and consequently escalated the dose to twice daily without any consultation or supervision. Subsequently, on next visit OPD his blood sugar was controlled, however, he complained of hair loss from the scalp. This complaint was resolved with the discontinuation of Teneligliptin.

Keywords: Adverse effect, alopecia, DPP-4-induced hair loss, hair loss, type 2 diabetes mellitus, teneligliptin

Introduction

Type 2 diabetes mellitus (T2DM) is primarily the consequence of insulin resistance and abnormal insulin secretion. Individuals with T2DM often develop infirmity after the age of 30 years, usually obese (80%), and may have associated conditions as hypertension, insulin resistance, dyslipidemia, polycystic ovarian syndrome (PCOS). Individuals suffering from T2DM tend to be at a higher risk for the development of both micro as well as macrovascular complications. An array of drugs has been introduced like biguanides, sulphonylureas, thiazolidinediones, alpha-glucosidase inhibitors, Dipeptidyl peptidase IV inhibitors (DPPi), glucagon-like peptide (GLP-1) receptor agonists etc.

Teneligliptin is a DPP-IV inhibitor that reduces the metabolism of hormone incretin GLP-1 and glucose dependant insulinotropic

polypeptide (GIP) to attain glycemic control and has evolved as a low cost and effective treatment for T2DM.^[1] Teneligliptin when administered as a monotherapy or an add-on therapy to other drugs like glimepiride, metformin was well tolerated in patients suffering from T2DM in clinical trials.

Drug-induced alopecia reported in this patient is a reversible side effect that occurs during the first three months of treatment. This condition, however, resolved with the cessation of the responsible drug (teneligliptin). The occurrence of this condition as an adverse effect of teneligliptin has been scarcely reported in medical literature and to the best of our knowledge; this is the first such reported case.

Case History

A 35 years old male, known case of T2DM for 6 months came to our OPD with the chief complaint of hair loss from his scalp for the last 1 month after initiation of oral hypoglycaemic drugs [Figure 1]. On review of treatment history, it was revealed that he was prescribed 20 mg Teneligliptin + 1 g metformin for 3 months back. After 1 month of this regime, failure to achieve

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Figure 1: Type 4 vertex baldness during teneligliptin administration

the desired goal, he had escalated the dose himself to twice daily after which sugar got well controlled with fasting levels recorded 90 mg/dL and postprandial 156 mg/dL. His HbA1C came out to be 6.8%. On performing other tests like lipid profile, LFT, KFT, TSH, FSH, LH, iron profile, zinc levels, and testosterone levels all came out to be with normal range. The physical and neurological evaluation came out to be normal as well and the patient's family history revealed nothing by concern. By differential diagnosis, we ruled out psychiatric disorders like trichotillomania that could have caused hair loss.^[2] The patient was only on hypoglycaemic agents and no other potential drug causing hair loss like NSAIDs, antihypertensives were being administered. To rule out any possible dermatological disorder, the patient was evaluated by the dermatology department as well and came back clear. The pattern of his baldness was classified on the Norwood scale as type 4 Vertex area.

Since the patient had no previous complaint of alopecia before teneligliptin administration and other possibilities being excluded by meticulous history and evaluation, it was suggested that alopecia was associated with teneligliptin. A thorough search for any noted case report mentioning such side effects showed a case report published by Succurro *et al.*^[3] Thus, we stopped the drug and started him on glimepiride 2 mg and metformin 500 mg once daily. On the patient's follow-up after 2 weeks, his blood sugar levels were controlled and regrowth of hair was observed in the same area. After 2 months, his hair span completely normalized [Figure 2]. The patient refused for the reintroduction of teneligliptin. On Naranjo's causality score, this adverse reaction was 6 indicating a "probable" reaction to teneligliptin + metformin combination.

Discussion

T2DM is one of the most common metabolic disease affecting about 380 million people in the world. Several drugs are available in the market for the treatment of T2DM. Metformin is now established as the first choice drug for all T2DM patients except when it is not tolerated or contraindicated.^[4] Metformin is a



Figure 2: Hair regrowth observed after 1 month in the same patient after discontinuation of the drug

relatively safer drug with not so serious side effects. A case related to our case report was published of acute alopecia in female suffering with PCOS who was on metformin treatment and is thus worth mentioning here.^[5]

Teneligliptin is a newly developed oral DPP4 inhibitor used for the management of T2DM in the adult population with a reported reduction in HbA1C of 0.8–0.9% within 12 weeks of therapy. Teneligliptin is found to be economic, well-tolerated and also the safety profile is the same as other DPP4 inhibitors. Nasopharyngitis and cough are the few common adverse effects of Teneligliptin.^[6]

Alopecia is one of the major reasons people seek primary medical consults early and teneligliptin being recognized as one of the culprits is necessary. With increasing dermatological concerns, this article throws light regarding the importance of recognition of drug-induced alopecia as the differential at the first care contact itself as this will save both time and money of both the patient and the doctor. Since there are no special ways for the diagnosis and recognition of drug-induced alopecia, discontinuation of suspected drug and observing regrowth of hair are only ways of establishing an association and primary care and management of the same. Recurrence of hair loss after readministration of the same drug confirms the diagnosis.^[2]

The pathogenesis behind Teneligliptin-induced alopecia is difficult to explain as even if by inhibition of DPP4 inhibitors, adverse events like cytokine-induced inflammation and autoimmune disorders like alopecia areata induced by cytokines have been reported. Similar case was reported last year by Ali *et al.*^[7] that described bullous pemphigoid and alopecia in a patient taking linagliptin, a member of the DPP-IV inhibitors.^[8] The patient responded in a similar manner on discontinuation of the drug as our patient. A post-marketing surveillance study conducted in Japan offered corresponding results as our report of alopecia on increasing the dose to 40 mg once daily.^[9]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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