Possible Metformin-Induced Otorrhoea: A Rare Case

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ABSTRACT

Background: Ear problems attributed to metformin use are not documented in the literature.

Aim: To report a possible case of otorrhoea from metformin therapy.

Clinical details: A 50-year-old male developed an ear discharge during metformin therapy.

Outcomes: His ear discharge reappeared when metformin was reintroduced and disappeared when it was discontinued, suggesting a possible association between metformin and otorrhoea. The causality assessment revealed a 'probable' (Naranjo algorithm score 8) association and the severity was 'moderate' (Level 3).

Conclusion: First case of possible otorrhoea from metformin therapy to be reported in the literature.

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INTRODUCTION

Metformin, a biguanide derivative, has been used to treat type 2 diabetes mellitus for nearly 50 years. Metformin acts as an insulin sensitiser and lowers fasting plasma insulin concentrations by inducing greater peripheral uptake of glucose, as well as decreasing hepatic glucose output. Common adverse drug reactions are gastrointestinal and include: diarrhoea, cramps, nausea, vomiting and flatulence.[1] Metformin rarely causes lactic acidosis but patients with hepatic or renal impairment are at an increased risk.[2]

To date, otorrhoea from metformin therapy has not been reported in the literature. We report a possible case of otorrhoea from metformin therapy. Causality and severity of the reaction were assessed using the Naranjo and Hartwig scales, respectively.[3,4]

CASE REPORT

A 50-year-old Malay male visited the Wellness Centre at the Universiti Sains Malaysia, Penang, complaining of right ear discharge that coincided with metformin use. His medical history revealed that 6 years ago he had been diagnosed with type 2 diabetes mellitus and hypertension and prescribed metformin 500 mg 3 times daily, glicazide 80 mg twice daily and losartan 50 mg daily. The ear discharge was white to yellowish in colour with no smell and symptoms had been 'on-and-off' for 2 weeks. The patient reported that the problem persisted despite visiting several general practitioners. He also revealed that he became symptom free when he inadvertently missed taking metformin for 4 days. Therefore, he decided to cease taking metformin. Following metformin discontinuation, his diabetes worsened and as he was on the maximum dose of glicazide, metformin was recommenced. After 2 weeks of metformin use, the discharge from his right ear reappeared. The reappearance of otorrhoea on rechallenge suggested a 'possible' association with metformin. His metformin was ceased and replaced with sitagliptin and his glycaemia improved.

The causality and severity assessments of the adverse drug reaction revealed a 'probable' (Naranjo algorithm score 8) and 'moderate' (Level 3) association, respectively.[3,4]

DISCUSSION

Although many drug classes (e.g. aminoglycosides, macrolides, loop diuretics) can cause ototoxicity, the incidence of drug-induced unilateral ear discharge is very rare.[5-7] Otorrhoea can be serous, serosanguineous or purulent and associated symptoms can include: ear pain, fever, pruritus, vertigo, tinnitus and hearing loss. Otorrhoea can originate from the ear canal, middle ear or cranial vault.[8] Otorrhoea due to drugs has not been reported other than a rare report of the occurrence of cerebrospinal fluid rhinorrhoea in two patients with macroprolactinoma who were treated with bromocriptine.[9] As the otorrhoea experienced by our patient started after starting metformin, resolved after withdrawal and recurred on rechallenge, we surmised that the otorrhoea was due to metformin. However, since the discharge was not culture tested, an infective origin cannot be excluded.

Causality assessment is an ideal way of establishing a causal relationship between a drug and a suspected adverse drug reaction. The Naranjo algorithm is commonly used for causality assessment of adverse drug reactions and is based on the score calculated from responses to 10 questions. On a scale with a maximum of '13' points, a score greater than '9' confirms the adverse drug reaction is associated with the suspected drug. A score of '5 to 8' is considered 'probable', while a score of '1 to 4' is categorised as 'possible'. In our case, the causality assessment revealed the adverse drug reaction to be 'probable'.

Severity assessment of adverse drug reactions can provide useful information and guide initiatives towards management of adverse drug reactions. The Hartwig scale categorises adverse drug reactions as 'mild', 'moderate' or 'severe'.[4] In our case, the suspected drug was withdrawn; thus fitting the 'moderate' category.

In conclusion, this is the first case of possible otorrhoea from metformin therapy to be reported in the literature.

Competing interests: None declared

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