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症例報告

A case of eyelash growth abnormality after switching from latanoprost ophthalmic solution to bimatoprost ophthalmic solution

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Summary

We report here a case of eyelash growth abnormality developing in a patient with primary open-angle glaucoma when treatment was switched from latanoprost (LAT) ophthalmic solution to bimatoprost (BIM) ophthalmic solution. The patient was a 60-year-old woman with glaucoma of the right eye. No eyelash growth abnormality was evident during the 8-month use of the glaucoma medication LAT ophthalmic solution, a prostaglandin F2α derivative. After 8 months, narrowing of the visual field continued and treatment was switched to BIM ophthalmic solution, also a prostaglandin F2α de-rivative. This change led to improvements on visual field tests and in the control of in-traocular pressure, but after 6 months of BIM treatment use eyelash growth abnormality appeared.

Key words
eyelash growth abnormality, latanoprost, bimatoprost, open-angle glaucoma, adverse drug reaction (ADR)

Summary（和文）

原発開放隅角緑内障患者に対して　ラタノプロスト（LAT）点眼液からビマトプラスト（BIM）点眼液に切り替えて治療を行なったところ、睫毛の異常が認められた一症例を経験したので報告する。症例は、60歳代女性で右目緑内障患者である。患者は、緑内障治療薬であるプロスタグランジンF2α誘導体薬剤LAT点眼液の使用開始から８ヶ月間では睫毛の異常を認めなかった。その後、視野狭窄の進行が認められ、プロスタグランジンF2α誘導体薬剤であるBIM点眼液に変更した。変更後、眼圧コントロール及び視野検査の改善がみられたが、BIM点眼液を使用開始後６ヶ月目で睫毛の異常が認められた。

Key words（和文）
睫毛異常、ラタノプロスト、ビマトプロスト、開放隅角緑内障患者、副作用

Introduction

Glaucoma is an eye disease involving characteristic changes to the optic nerve and visual field and associated functional and structural abnormalities of the eye. Optic nerve damage can usually be improved or controlled by adequately lowering intraocular pressure (IOP). Disturbance of visual function has a major impact on the patient's quality of life, but when treating the patient it must be also remembered that quality of life can be impaired by treatment-related adverse reactions and complications as well as the social and economic burden of hospital visits and admissions, anxiety over loss of eye-sight, among other factors. At present, the most reliable method of treatment is consid-ered to be reduction of IOP, and ophthalmic solutions based on β-blockers or prosta-glandins are used as the first-line pharmaceutical treatment option owing to their effec-tiveness in lowering IOP.

The prostaglandin-related drug bimatoprost ophthalmic solution 0.03% (Lumigan®; hereafter 'BIM eye drops') is a new prostamide derivative synthesized by the US company Allergan. Because of a powerful effect in lowering IOP at a dose of one drop per eye per day, BIM eye drops were approved in the US in March 2001 for the indications of primary open-angle glaucoma and ocular hypertension and have subsequently been approved in 88 countries (as of August 2010). In Japan, BIM eye drops were approved for glaucoma and ocular hypertension in July 2009[1]. Because BIM eye drops have been proven to be non-inferior to latanoprost 0.005% ophthalmic solution (Xalatan®; hereafter 'LAT eye drops'), they are frequently used in clinical practice, particularly for non-responders to LAT eye drops[1–4].

Here we report a case of eyelash growth abnormality in a patient whose treatment was switched from LAT eye drops to BIM eye drops.

Case report

Patient: 60-year-old woman
Occupation: Pharmacist
Chief complaint: Eyelash growth abnormality of the right eye
Previous history: Ovarian cancer, sarcoidosis, psoriasis vulgaris
History of current illness: The patient noticed a sudden narrowing of the visual field in July 2008 and was told by her physician that she had high intraocular pressure. She was referred to a university hospital and was diagnosed with glaucoma of the right eye with an IOP of 48 mmHg. Uveitis was also suspected. Treatment was started with carteolol hydrochloride ophthalmic solution 1% and fluorometholone eye drops 0.1%.

Clinical course: In October 2008, additional treatment was started with brinzolamide eye drops 1% and LAT eye drops 0.005% because there was no significant lowering of IOP. In February 2009, IOP had stabilized at 14–18 mmHg. In June 2009, LAT eye drops were stopped because IOP control and visual field tests were both good. In March 2010, additional treatment with BIM eye drops 0.03% was started because

visual field tests showed slight progression of visual field narrowing. In April 2010, IOP had stabilized at 13–18 mmHg. There were no adverse reactions or other problems associated with the use of eye drops. In September 2010, IOP was stable but the patient complained to her pharmacist of an abnormality of the eyelashes of the right eye. At a subsequent outpatient appointment, the physician confirmed a difference in length between the left and right eyelashes, that is the length of right ones more about 5mm longer than that of left ones (**Fig.1**). Treatment with BIM eye drops was continued and IOP stabilized, but the eyelashes remained at the length confirmed in September 2010.

Fig. 1. The eyelash growth abnormality in 60-year-old woman after using of BIM eye drops. The length of right eyelashes more about 5mm longer than that of left ones

Discussion

The eyelash growth abnormality in this patient was not seen during the 8-month use of LAT eye drops and developed only 6 months after changing to BIM eye drops. Previous basic research on PGF2 derivatives such as LAT has shown that these chemicals induce eyelash growth through triggers such as shifting to the growth phase of the fol-licular development cycle due to extracellular matrix (ECM) remodeling, and promoting hair growth through increased blood flow. BIM may also promote eyelash growth using a similar mechanism of action[6, 7].

In regard to the incidence of eyelash abnormalities associated with BIM eye drops, a randomized clinical trial comparing IOP reduction in glaucoma patients treated for 6 months with either BIM eye drops or LAT eye drops reported a statistically significant difference between eyelash abnormalities in the two groups, with abnormalities seen in 14 of 133 subjects (10.5%) in the BIM eye drops group and in 0 of 136 subjects (0%) in the LAT eye drops group[8]. Another randomized clinical trial comparing IOP reduction in glaucoma patients treated for 6 months with either BIM eye drops or LAT eye drops in combination with timolol eye drops also reported a significant difference between the two groups, with eyelash abnormalities seen in 12 of

28 subjects (42.8%) in the BIM eye drops group and in 0 of 28 subjects (0%) in the LAT eye drops group[9]. These results indicate that the incidence of eyelash abnormalities as an adverse reaction is remarkably higher with BIM eye drops than with LAT eye drops.

Turning to the causal relationship between BIM eye drops and eyelash abnormalities, we reviewed the timing of onset of eyelash abnormalities and degree of severity at different observation periods in long-term administration studies of BIM eye drops. The results showed that this adverse reaction occurred frequently from the start of administration to week 12, but was also seen from week 12 to week 28[1, 2]. These results strongly support a causal relationship between our patient's use of BIM eye drops and her eyelash growth abnormality.

The package insert for BIM eye drops includes the precautionary statement that if the eye drops come into contact with the skin of the eyelid during application, they should be wiped away or the face should be washed to prevent or reduce excessive hair growth around the eye. Our patient was a pharmacist who was fully aware of and com-plied with this precaution, yet she was unable to avoid this eyelash growth abnormality as a reaction to BIM eye drops.

When issuing guidance on the use of BIM eye drops to patients in the pharmacy, the pharmacist should explain the risk of developing an eyelash growth abnormality. If such an abnormality becomes a problem in the patient's daily life or affects their appearance, the pharmacist should also suggest the patient consult an ophthalmologist as well as ad-vise her on measures such as trimming or removing eyelashes.

Written informed consent was obtained from the patient for publication of this case report.

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