

## „Teddy bear” synthetic fibre granuloma of the conjunctiva. Case study

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### Keywords

„teddy bear” granuloma,  
conjunctiva,  
granulomatous foreign  
body reaction

### Abstract

**Introduction:** Synthetic fibre granuloma of the conjunctiva, sometimes known as „teddy bear granuloma” is a rare granulomatous foreign body reaction of the conjunctiva to synthetic fibres. The name „teddy bear” refers to the origin of the synthetic fibres. It is often an incidental finding, most commonly found in children, and usually presents as a unilateral conjunctival mass of the inferior eyelid fornix.

**Case report:** The 9-year-old girl was admitted to the Department of Ophthalmology of Semmelweis University, Budapest because of irritation, discomfort and foreign body sensation in her right superior eyelid for three days. Split-lamp examination showed a mulberry-like, bulging conjunctival mass of a 5 mm diameter in the superior tarsal conjunctiva. It was embedded with a bunch of white, hair-like material. After surgical removal of the lesion, microscopic examination confirmed a foreign body granuloma, containing fibers showed strong birefringence in polarized light, which proved their synthetic origin. Postoperatively the complaints of the patient were disappeared; there was no recurrence of the lesion at one year after excision.

**Conclusion:** Eighteen cases of conjunctival “teddy bear” granuloma have been reported in the literature. To the best of our knowledge, this is the first reported case of this condition in Hungary. Superior conjunctival localization of the granuloma is rare among all of the introduced cases. An awareness of this condition will allow early and accurate diagnosis and treatment.

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## Introduction

Synthetic fibre granuloma of the conjunctiva, sometimes known as „teddy bear granuloma“ is a rare granulomatous foreign body reaction of the conjunctiva to synthetic fibres (1). The name „teddy bear“ refers to the origin of the synthetic fibres – there are some reported cases in the literature which were caused by materials used in stuffed toy animals (2). The lesion was first described by Weinberg and associates, in 1984 (3). It is often an incidental finding, most commonly found in children, and usually presents as a unilateral conjunctival mass of the inferior eyelid fornix. There is only one reported case in the literature where it is presented superiorly (2,3).

Eighteen cases of conjunctival „teddy bear“ granuloma have been reported in the literature (1). To the best of our knowledge, we present here the first reported case of this condition in Hungary. In our case, the granuloma occurred in the superior eyelid fornix, which is rarity among the cases reported earlier.

## Case report

The 9-year-old girl was admitted to the Department of Ophthalmology of Semmelweis University, Budapest because of irritation, discomfort and foreign body sensation in her right superior eyelid for three days. She was otherwise in a good general health and she had no history of ocular trauma, infection, surgery or placement of a foreign body in the eye. There was no change in visual acuity. Split-lamp examination showed a mulberry-like, bulging conjunctival mass of a 5 mm diameter in the superior tarsal conjunctiva. It was embedded with a bunch of white, hair-like material (Figs 1-2). The lesion and the material could not be removed during the split-lamp examination. The



Fig. 1. A slit-lamp photograph (6.3x magnification) showing a mulberry-like, bulging conjunctival mass in the nasal part of the superior tarsal conjunctiva in the right eye.



Fig. 2. This slit-lamp photograph (16 x magnifications) shows that the lesion was embedded with a bunch of white, hair-like material.

rest of her ophthalmological examination was otherwise normal.

The lesion was excised under general anaesthesia and sent for histopathological analysis. Microscopic examination of the conjunctiva revealed a stromal granulation tissue showing heavy chronic inflammation, mild activity (the subepithelial stroma contained inflammatory cells, mostly epithelioid macrophages, eosinophils, histiocytes), and aggregates of synthetic fibres, surrounded by foreign body giant cells (Fig 3). The refractile and colourless synthetic fibres within the lesion were identified by their strong birefringence in polarized light (Fig 4). The picture was compatible with a diagnosis of synthetic fibre granuloma of the conjunctiva.

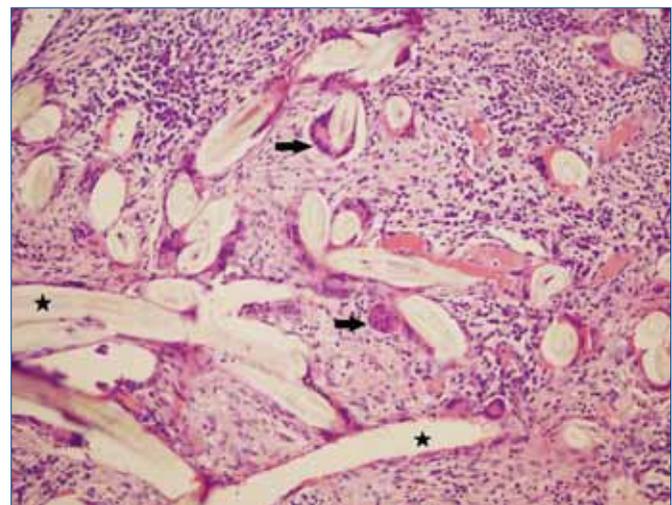


Fig 3. Histopathological section of the biopsy specimen: refractile, colourless synthetic fibres (★) surrounded by histiocytic giant cells (→) are seen in an inflamed background (H&E; 200x magnification).

Postoperatively, the eye was treated with levofloxacin five times daily for five days. For the first postoperatively day the complaints of the patient were disappeared, there was no recurrence of the lesion at one year after excision.

## Discussion

A close exposure of the eyes of synthetic material used in stuffed toy animals, blankets, beddings and pullover sweaters may cause penetration of the conjunctiva by synthetic fibres. Usually, foreign bodies, that comes into contact with the ocular surface are removed by the eye protective mechanisms as blinking and tearing (2, 4, 5). Occasionally, foreign bodies may be retained in the eyelid fornix, encapsulated by the mucous, embedded in the underlying stroma and may induce a local inflammatory response (6, 7, 8). This may cause synthetic fibre granuloma formation in the conjunctiva, which condition is commonly known as „teddy bear“ granuloma because of the origin of the synthetic fibres (1, 2).

Foreign body granulomas of the conjunctiva caused by synthetic fibres were first described by Weinberg and associates, in 1984.<sup>3</sup> Since then eighteen cases have been reported in the literature (1). The ages of the reported patients ranged from 26 months to 17 years (2, 3). The granulomas usually were presented as a unilateral conjunctival mass of the inferior eyelid fornix (1, 2). To the best of our knowledge, we present here the first reported case of this condition in Hungary and up to our case there is only one reported case in the literature where it is presented superiorly (3).

The clinical appearance of the synthetic fibre granuloma of the conjunctiva is rather nonspecific. Some patients were asymptomatic, without a history of

trauma. In these cases, the patients were referred to an eye department after the granuloma was visible. The other part of the affected children may present with symptoms of ocular irritation and foreign body or discomfort sensation (1, 2, 6, 9). Slit-lamp examination commonly shows a nonspecific conjunctival mass in very different colours (depending on the colour of the synthetic material, white-yellow, blue, black, green or even pink colour of the mass were described in the literature), associated with follicular conjunctivitis, papillary conjunctivitis or chemosis of the conjunctiva (2, 4).

Differential diagnosis of synthetic fibre granuloma of the conjunctiva include chalazion, papillary hyperplasia related to vernal conjunctivitis, pyogenic granuloma, ophthalmia nodosa, atypical dermoid or dermolipoma, sarcoidosis and neoplasms (such as rhabdomyosarcoma and vascular tumors) (2, 4, 9) In contrast to the clinical signs, the histopathological and ultrastructural features of conjunctival granulomas are very characteristic and usually diagnostic (2, 6). Microscopic examination reveals granulomatous inflammatory tissue with epithelioid macrophages, lymphocytes, plasma cells, eosinophils and usually foreign-body cells surrounding the synthetic fibres (2, 10, 11). The simplest method to confirm the diagnosis is excision of the conjunctival granuloma and like to our case microscopic examination in polarized light demonstrating marked birefringence of the synthetic fibres (6, 12).

Surgical removal of the conjunctival granuloma and postoperative treatment with antibiotics is recommended. In very young and anxious patients general anaesthesia is often needed during the excision. In the older children with good cooperation it has been suggested to remove the lesion during slit-lamp examination under topical anaesthesia with minimal bleeding and discomfort (2, 9, 10).

Although the entity of synthetic fibre granuloma of the conjunctiva was recognised more than 20 years ago, we can find only eighteen reported cases in the literature.<sup>1</sup> Because of the low number of reports, clinicians, especially ophthalmologists and pathologists are unfamiliar with this condition.<sup>5</sup> An awareness of this condition will allow early and accurate diagnosis and treatment (surgical removal and postoperative antibiotic therapy) (10). Seeing the results in the literature, prognosis following surgical excision is excellent (1, 4).

## Declaration

No conflicts of interests were declared by authors.

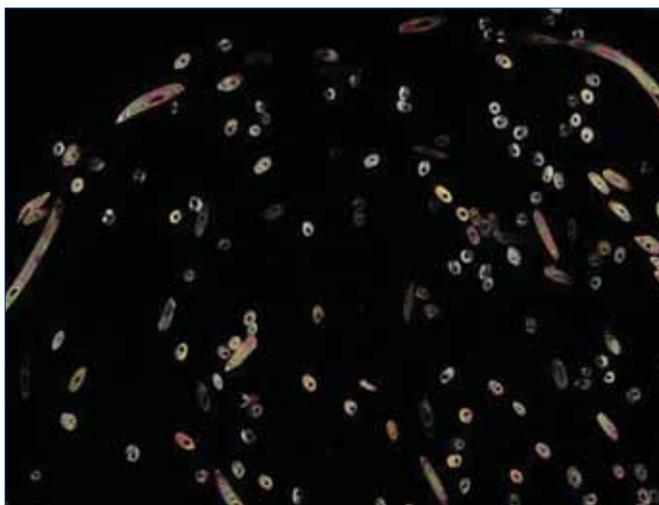


Fig 4. Polarization shows numerous birefringent foreign synthetic fibres (polarization microscopy picture; 100x magnification).

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