

the diagnosis of this condition. Intradermal skin tests, using appropriate concentration of allergen, are the best method of identifying ocular allergy.<sup>1,2</sup> There are other diagnostic tests available, including detection of serum and local immunoglobulin E (IgE; specific and non-specific). However, these methods are complicated to perform and the results may be difficult to interpret. A simple clinical test is explained here that can be performed by an ophthalmologist or even a physician and that could facilitate diagnosis of IgE-mediated type 1 allergic conjunctivitis.

Without bending the patient's neck, the lower eyelid is gently pulled down while the patient is made to look up. If ballooning of the conjunctiva through the lower eyelid occurs (Fig. 1: the balloon sign) then this is almost pathognomonic for IgE-mediated type 1 allergic conjunctivitis.

#### Comment

The conjunctiva has a rich supply of blood vessels and, in addition, an abundance of lymphatic tissue, which makes it capable of developing all types of immune reactions.

Bulging out of the conjunctiva from the lower eyelid occurring in simple allergic conjunctivitis has been reported.<sup>3,4</sup> We have used this test for many years and found it convenient and easy in the diagnosis of allergic conjunctivitis. Our experience has shown that this test is, with a few exceptions, seen only in allergic conjunctivitis caused by an IgE-mediated type 1 hypersensitivity reaction. It is not observed in contact conjunctivitis or keratoconjunctivitis medicamentosa, which are type 4 delayed hypersensitivity reactions. It is not seen in infectious or chemical conjunctivitis. In fact, in these latter non-allergic conditions, the same manipulation when applied on the lower lid will make the conjunctiva sink inwards. In vernal keratoconjunctivitis and hay fever conjunctivitis, both of which are type 1 hypersensitivity reactions, the 'balloon sign' is already evident in the earlier stages when the typical conjunctival signs are incomplete.

The 'balloon sign' when present is almost pathognomonic for conjunctivitis of allergic origin, mostly due to an IgE-mediated type 1 reaction. This test is very simple to perform and should help in the diagnosis and treatment of the diseases.

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Sir,

#### Uveitis and Skin Tattoos

There are numerous causes of acute anterior uveitis, many involving underlying immunological mechanisms which are still uncertain. The association of chronic recurrent anterior uveitis with swelling of skin tattoos is an unusual occurrence, thought to be due to an immunological response to the metallic components of the tattoo dye.<sup>1,2</sup>

#### Case Report

A 53-year-old man developed a localised swelling and eruption related to a long-standing tattoo on his left forearm (Fig. 1). Two months later he presented to the eye department with a painful red eye and blurred vision, and a diagnosis of right-sided acute anterior uveitis was made. There was no significant past ocular history. Visual acuity was recorded as 6/18 improving to 6/9 with pinhole in the right eye, and 6/6 in the left. He was commenced on frequent topical steroid and mydriatic. The uveitis gradually responded over a 1 month period when the fellow eye became similarly involved. Recurrent episodes occurred



Fig. 1. Tattoo on left forearm.

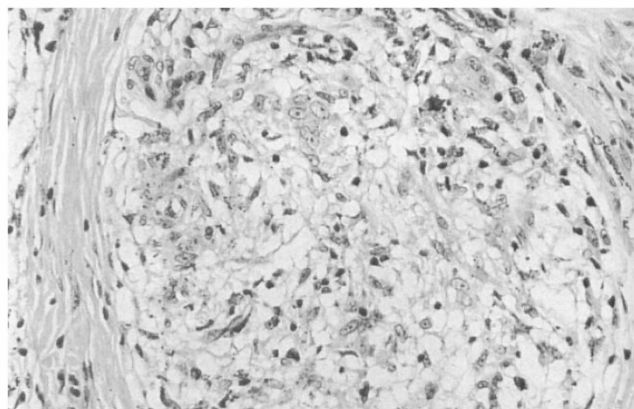


Fig. 2. 'Sarcoid type' allergic granulomatous reaction in upper dermis with overlying subcorneal pustule.

over the next 5 months, visual acuities remaining at 6/9 in both eyes. The tattoo swelling persisted until surgical excision.

Ocular examination revealed fine keratic precipitates and moderate anterior chamber activity with cells and flare. There was no evidence of vitreous involvement, or retinal vasculitis. Results of routine investigations including a full blood count, erythrocyte sedimentation rate, VDRL and TPHA tests, chest radiograph and sacroiliac joint radiograph were all within normal limits and there were no clinical signs of an underlying systemic disorder.

Excision biopsy of the skin tattoo revealed a 'sarcoid type' allergic granulomatous reaction to the tattoo dye in the upper dermis with an overlying subcorneal pustule (Fig. 2). Following excision, there was no further recurrence of uveitis.

### Discussion

Tattoos are composed of pigment containing metallic compounds which may provoke a sensitisation reaction. Metals commonly found in tattoo pigment include mercury (red), chromium and titanium (green), copper (blue) and iron (yellow and brown).<sup>3</sup>

Delayed hypersensitivity reactions to the metallic component may occur, with the histological appearance varying from diffuse lymphohistiocytic infiltrate<sup>3</sup> to pseudolymphomatous reactions,<sup>4</sup> lichenoid reactions<sup>5</sup> and sarcoidal granulomas.<sup>6</sup>

Buechner and associates<sup>7</sup> suggested that helper T cells are important in the formation of sarcoid granulomas by mononuclear phagocytes, and that duration and activity of the disease process may be related to T cell populations.

Hanada and associates<sup>1</sup> reported a case in which symptoms of systemic sarcoidosis and concurrent uveitis developed in a 31-year-old man following extensive tattooing. Histological examination of the skin lesions, regional lymph nodes and lung tissue revealed non-caseating granulomas and, in addition, microscopy of the lung specimens showed fragments of red tattoo granules. They concluded that tattoo pigments were responsible for the sarcoidal granulomas, as all lesions appeared following the tattooing process.

Mansour and Chan<sup>2</sup> recently reported a case of recurrent bilateral uveitis in a 35-year-old man with extensive skin tattoos. Biopsy of the tattoos revealed non-necrotising granulomas surrounding pigment granules. Immunopathology of the lesions during the phase of acute swelling showed nests of infiltrating cells in the dermis, consisting mainly of T and B lymphocytes and macrophages. Ninety per cent of the infiltrating cells stained positive for major histocompatibility complex class 2 antigens. In this case there was a high ratio of B lymphocytes and macrophages with equal numbers of T-helper and T-suppressor cells characteristic of delayed-type hypersensitivity, in contrast to sarcoidosis.<sup>7,8</sup>

Our patient showed no evidence of active sarcoidosis, but 'sarcoid type' granulomas were evident in the tattoo biopsy. It is probable that the concurrent tattoo eruption

and uveitis were related to the sensitising nature of the metallic component of the tattoo dye.

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Sir,

### Coexistent Optic Disc Pit and Ocular Hypertension Misdiagnosed as Glaucoma

Optic disc pit is an uncommon congenital malformation of uncertain embryological origin.<sup>1,2</sup> It is associated with other congenital defects such as retinal dysplasia, retinochoroidal colobomata, ocular vascular anomalies and midline neurological abnormalities.<sup>3,4</sup> Optic disc pits are usually asymptomatic unless associated with macular disease,<sup>3</sup> but unless the examiner is familiar with their appearance they may present a diagnostic challenge.

### Case Report

A 60-year-old man presented with left central visual clouding. He had no significant past history and no relevant family history. The visual acuities were 6/6, the anterior segments and gonioscopy were unremarkable, but the intraocular pressures were 24 mmHg right and 26 mmHg left. The right fundus and disc were normal, but an inferotemporal excavation of the neural rim of the left disc was noted which was thought to represent glaucomatous cupping. Central perimetry revealed an apparent left arcuate scotoma with a normal right field. Left primary open angle glaucoma and right ocular hypertension were diagnosed and treatment was commenced with guttae timolol 0.25% to both eyes.

However, during follow-up, the disc appearance was reviewed and thought to be an optic disc pit 0.28 disc dia-