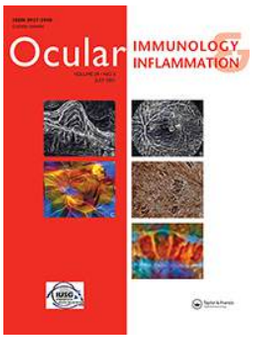
Übersetzung für unsere Betroffenen

Tattoo-Assoziierte Uveitis

Jahrhunderts durch die Schriften von James Cook, einem britischen Marineoffizier, der den Südpazifik bereiste und erforschte, in den englischen Sprachgebrauch eingeführt. Diese Reisen führten Cook und seine Mannschaft nach Polynesien, wo Hautkunst weit verbreitet war und von den Einheimischen als „tatau“ oder „tatu“ bezeichnet wurde - was „stechen“ bedeutet.1 Dermatologen kennen mindestens fünf Arten von Tätowierungen, darunter: 1) traumatische Tätowierungen, wie sie nach einer Verletzung durch Asphalt oder Bleistiftmine auftreten können; 2) medizinische Tätowierungen, die zur Ausrichtung und Dosierung von Strahlung und anderen therapeutischen Eingriffen verwendet werden; 3) Identifizierungs-Tätowierungen, die in der Vergangenheit in Gefängnissen und Konzentrationslagern verwendet wurden und zunehmend als medizinisches Warnsignal bei Diabetikern oder Menschen mit schweren Allergien eingesetzt werden; 4) kosmetische Tätowierungen, die zur Nachahmung von temporären Eyeliner- und/oder Augenbrauenkonturen oder zur Tarnung von Hautkrankheiten wie Vitiligo verwendet werden; und 5) dekorative Tätowierungen, die bei weitem am häufigsten vorkommen und oft große und mehrere Hautbereiche betreffen. 2,3 Während verschiedene Formen der Tätowierung schon seit Jahrtausenden praktiziert werden, hat sich diese Praxis in den letzten Jahrzehnten besonders stark verbreitet: 10 bis 30 % der Menschen in den Industrieländern und bis zur Hälfte oder mehr einiger regionaler oder regionaler Bevölkerungsgruppen haben mindestens eine dekorative oder kosmetische Tätowierung.4 -6 Tätowierungen werden durch Injektion von Farbstoffen und Pigmenten in die Dermis mit einer Nadel hergestellt; während einige Tätowierungen noch von Hand aufgetragen werden, kommen bei kommerziellen Tätowierern inzwischen häufiger Tätowiermaschinen zum Einsatz.7 Die Prävalenz von Komplikationen im Zusammenhang mit lokalen Tätowierungen kann bis zu 2 % betragen und umfasst akute und chronische Infektionen, Entzündungsreaktionen und dermatologische Malignome.7 -10 Unter den Entzündungsreaktionen werden Fremdkörper und sarkoidähnliche Reaktionen am häufigsten histologisch identifiziert, was die Suche nach einer kutanen oder systemischen Sarkoidose, insbesondere einer pulmonalen Sarkoidose, bei allen Patienten, die sich mit solchen Befunden vorstellen, unterstützt. Das Auftreten von assoziierten Entzündungsreaktionen kann Wochen bis Jahre nach der Tätowierung auftreten und ist bei dunkelblauen oder schwarzen Tätowierungen im Vergleich zu helleren Tätowierungen häufiger.7 10 Obwohl die auslösenden Faktoren nur selten identifiziert werden, haben vereinzelte Fallberichte darauf hingedeutet, dass Interferon,11,12 BRAF-, MEK- und Immuncheckpoint-Inhibitor-Therapien,13-20 Tumornekrosefaktor (TNF)-Inhibitoren,21 hochaktive antiretrovirale Therapie (HAART)-assoziierte Immunrekonstitution,22-24 und Impfungen25,26 Auslöser für tätowierungsbedingte granulomatöse Reaktionen sein könnten. Seit dem ersten Bericht über tattoo-assoziierte Uveitis von Lubeck und Epstein vor 70 Jahren27 wurden mehr als 40 Fälle in die Literatur aufgenommen.28 Das Fehlen einer Standardfalldefinition der tattoo-assoziierten Uveitis hat epidemiologische und vergleichende Studien erschwert. Fälle von tattoo-assoziierter Uveitis wurden grob unterteilt in solche, die ohne Tätowierung oder systemische sarkoidartige Beteiligung auftreten (10-20 %), solche mit einer auf die Tätowierung begrenzten sarkoidartigen Reaktion (20-30 %) und solche, bei denen gleichzeitig eine entfernte kutane oder systemische Sarkoidose mit oder ohne Tätowierungsbeteiligung diagnostiziert wurde (50-60 %). 28 Es ist jedoch anzumerken, dass die Thoraxuntersuchung auf entfernte kutane oder systemische Sarkoidose in früheren Berichten uneinheitlich beschrieben wurde, so dass die genaue Prävalenz und das Ausmaß der nicht-okularen Sarkoidose bei Patienten mit tattoo-assoziierter Uveitis unbekannt bleibt. Die tattoo-assoziierte Uveitis ist meist nicht-granulomatös, anterior und bilateral, obwohl granulomatöse Merkmale und eine ausgedehntere Panuveitis mit oder ohne Choroiditis, Netzhautvaskulitis, Makula- oder Sehnervenkopfödem und seröse Netzhautablösung auftreten können.28 -32 Die Behandlung besteht in der Regel aus kurzfristigen regionalen und systemischen Kortikosteroiden, obwohl chronische oder wiederkehrende Entzündungen den längerfristigen Einsatz systemischer, nicht kortikosteroidhaltiger Immunsuppressiva erfordern können.32-34 Angesichts der hohen Rate granulomatöser Hautbefunde hat

Kluger die Verwendung des Begriffs Tattoo-Assoziiertes Granulom mit Uveitis (TAGU) vorgeschlagen, um diese besondere klinische Situation zu beschreiben.28 Keratopigmentierung, auch bekannt als Hornhauttätowierung, wird seit Jahrhunderten von Ärzten und Augenärzten zur Behandlung von optisch symptomatischen oder kosmetisch entstellenden Hornhautnarben und Irisunregelmäßigkeiten eingesetzt,35-37 mit im Allgemeinen guten Ergebnissen.38,39 Während infektiöse oder nicht-infektiöse Keratitis nach solchen Verfahren auftreten kann, scheint sekundäre Uveitis selten zu sein.38 Im Gegensatz dazu ist die Tätowierung der Augenoberfläche durch medizinisch ungeschulte Tätowierer eine relativ neue Form der extremen Körpermodifikation, die mit einer hohen Rate an Eindringen von Globuli und damit verbundenen Komplikationen verbunden ist, einschließlich Uveitis, Glaukom, Endophthalmitis und Netzhautablösung, was häufig zum Verlust des Sehvermögens und seltener zum Verlust des Auges führt.40 Diese Ausgabe von Ocular Immunology & Inflammation (OII) enthält detaillierte Beschreibungen von zwei Patienten, die nach einer Permanent-Makeup-TätowierungTAGU entwickelten,41 und 40 Diese Ausgabe von Ocular Immunology & Inflammation (OII) enthält ausführliche Beschreibungen von zwei Patienten, die nach einer Permanent-Make-up-Tätowierung TAGU entwickelten,41 und einen einzelnen KONTAKT Emmett T. Cunningham emmett_cunningham@yahoo.comOCULAR IMMUNOLOGY AND INFLAMMATION2021, VOL. 29, NO. 5, 835-837https://doi.org/10.1080/09273948.2021.2006517



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EDITORIAL

Tattoo-Associated Uveitis

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The word 'tattoo' was introduced into the English language in the mid-eighteenth century through the writings of James Cook, a British naval officer who sailed and explored the South Pacific. These travels took Cook and his crew to Polynesia, where skin art was common and referred to by the local inhabitants as 'tatau' or 'tatu' - meaning 'to strike.'[1] At least five types of tattoos are recognized by dermatologists, including: 1) traumatic, as can occur following a penetrating injury with asphalt or pencil lead; 2) medical, which are used to direct and dose radiation and other therapeutic interventions; 3) identification, used historically in prisons and labor or concentration camps and increasingly for medical alert in diabetics or those with severe allergies; 4) cosmetic, as applied to mimic temporary eyeliner and/or eyebrow contours, or to camouflage dermatologic conditions such as vitiligo; and 5) decorative – by far the most common and often involving large and multiple areas of skin.[2,3] While various forms of tattooing have been performed for millennia, the practice has become particularly commonplace in recent decades, with 10% to 30% people in developed countries and up to half or more of some regional or sub-populations having at least one decorative or cosmetic tattoo.[4–6] Tattoos are produced by injection of dyes and pigments into the dermis through a needle; while some tattoos are still applied by hand, tattoo machines are now used more commonly by commercial tattoo artists.

The prevalence of localized tattoo-related complications may be as high as 2%,[7] and include acute and chronic infections, inflammatory reactions, and dermatologic malignancies.[7–10] Among the inflammatory reactions, foreign body and sarcoid-like responses are identified most often histologically, supporting a search for cutaneous or systemic sarcoidosis, particularly pulmonary, in all patients who present with such findings. The occurrence of associated inflammatory reactions can occur weeks to years after tattoo placement and has been suggested to be more common in cases of dark blue or black tattoos as compared to more brightly colored tattoos.[7–10] Even though inciting factors are rarely identified, isolated case reports have suggested a role for interferon,[11,12] BRAF, MEK and immune checkpoint inhibitor therapies,[13–20] tumor necrosis factor (TNF) inhibitors,[21] highly active anti-retroviral therapy (HAART)-associated immune reconstitution,[22–24] and vaccination[25,26] as triggers for tattoo-related granulomatous reactions.

Since the first report of tattoo-associated uveitis by Lubeck and Epstein 70 years ago,[27] there have been more than 40 cases added to the literature.[28] The absence of a standard case definition of tattoo-associated uveitis has made epidemiologic and comparative studies more challenging. Cases of tattoo-associated uveitis have been divided broadly into those that occur without tattoo or systemic sarcoid-like involvement (10–20%), those with a sarcoid-like reaction limited to the tattoo (20–30%), and those concurrently diagnosed with distant cutaneous or systemic sarcoidosis, with or without tattoo involvement (50–60%).[28] It should be noted, however, that thorough testing for distant cutaneous or systemic sarcoidosis has been described inconsistently in prior reports and so the precise prevalence and extent of non-ocular sarcoidosis in patients with tattoo-associated uveitis remains unknown. Tattoo-associated uveitis is most often non-granulomatous, anterior, and bilateral, although granulomatous features and more extensive panuveitis with or without choroiditis, retinal vasculitis, macular or optic disc edema, and serous retinal detachment can occur.[28–32] Treatment typically consists of short-term regional and systemic corticosteroids, although chronic or recurring inflammation can require the longer-term use of systemic non-corticosteroid immunosuppressive agents.[32–34] Given the high rate of granulomatous skin findings, Kluger has suggested use of the term Tattoo-Associated Granuloma with Uveitis (TAGU) to describe this distinctive clinical condition.[28]

Keratopigmentation, also known as corneal tattooing, has been used for centuries by physicians and ophthalmologists to treat optically symptomatic or cosmetically disfiguring corneal scars and iris irregularities,[35–37] with generally good results.[38,39] While infectious or non-infectious keratitis can occur following such procedures, secondary uveitis appears to be rare.[38] In contrast, tattooing of the ocular surface by medically untrained tattoo artists is a relatively recent form of extreme body modification associated with a high rate of globe penetration and related complications, including uveitis, glaucoma, endophthalmitis, and retinal detachment –resulting frequently in loss of vision and, less often, loss of the eye.[40]

This issue of *Ocular Immunology & Inflammation* (OII) contains detailed descriptions of two patients who developed TAGU following permanent makeup tattooing,[41] and a single

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case of presumed endophthalmitis associated with retinal necrosis and retinal detachment following inadvertent intraocular injection of tattoo ink during scleral tattooing performed by a tattoo artist.[42]

Ebrahimiadib et al[41] described two otherwise healthy women seen at a tertiary referral center in Teheran, Iran, who developed skin inflammation associated with anterior and intermediate uveitis four and six months following cosmetic tattooing applied to the eyebrows, respectively. Skin inflammation preceded uveitis by three weeks in each patient. Fluorescein angiography showed retinal vasculitis and, in one subject, cystoid macular edema. Both patients were found to have evidence of previously undiagnosed systemic sarcoidosis with elevated serum angiotensin converting enzyme levels and lung involvement – including mild interstitial involvement in one patient and hilar adenopathy in the second. Biopsy of the inflamed tattoo lesions, which showed redness, scaling, and papule formation, revealed non-caseating granulomas. One patient developed a nodule in an un-tattooed area that was also found to contain non-caseating granulomas on biopsy. Purified protein derivative testing for exposure to *Mycobacterium tuberculosis* was negative in each patient. Both patients responded well to topical and systemic corticosteroids followed by systemic methotrexate. The authors noted that tattoo-associated uveitis is uncommon and may occur with or without evidence of cutaneous or systemic inflammation. Whether such patients experience reactivation of previously asymptomatic systemic sarcoidosis or develop sarcoidosis *de novo* following tattoo placement was not known.

Haq et al[42] reported a 47-year-old man who developed presumed endophthalmitis associated with retinal necrosis and retinal detachment two days after inadvertent intraocular injection of tattoo ink during a decorative scleral tattoo procedure. In addition to the presence of subconjunctival ink, examination of the affected eye showed conjunctival injection, hypopyon formation, dense vitreous opacities, and retinal detachment suggesting scleral penetration. The infection was managed with intravitreal vancomycin and ceftazidime, systemic moxifloxicin and vitrectomy, lensectomy, retinectomy, evacuation of subretinal tattoo ink, and retinal detachment repair with silicone oil placement. Bacterial and fungal cultures obtained on intraocular fluid at the time of surgery were negative, but mass spectrometry analysis demonstrated high levels of copper, which is known to be both retinotoxic and pro-inflammatory. The patient developed acute granulomatous anterior uveitis five weeks after surgery, which was successfully managed with regional and systemic corticosteroids. Vision at last follow-up was a remarkable 20/25.

Together, these cases highlight the emergence of both skin and ocular tattooing as uncommon causes of intraocular inflammation. Patients who develop uveitis should be questioned about their tattoo history and whether or not any such tattoos have become elevated, inflamed, painful, itchy or show color change prior to or concurrent with the onset of their uveitis. For those suspected of having TAGU, a systematic search for distant cutaneous or systemic sarcoidosis should be initiated, including a complete dermatologic examination, full-body computerized tomography (CT) or combined CT/positron emission tomography (CT/PET) to look for foci of inflammation, and biopsy of both the inflamed tattoo and any readily accessible areas identified on imaging. Recent receipt of interferon, TNF inhibitors, cancer therapies, vaccination, and HIV status and treatment should also be queried. Most patients with TAGU respond well to short-term topical, regional, or systemic corticosteroids, with a minority requiring longer-term systemic immunotherapy. Although rare, reports of scleral or subconjunctival tattooing suggest an alarming high rate of globe penetration and associated complications, supporting a role for prompt surgical intervention in eyes with evidence of intraocular dye injection.

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