Eruptive Syringoma: A Case Report and Review of “Paisley Tie” Tumors

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Abstract
Syringomas are benign adnexal neoplasms of eccrine lineage characterized by comma- or “tadpole”-shaped, dilated, cystic eccrine ducts typically presenting as multiple small, firm, skin-colored papules on the eyelids of adolescent and adult females. Syringomas are often resistant to therapy. They have been reported to occur independently or in association with systemic syndromes, notably Down syndrome. Less commonly, syringomas in the setting of diabetes mellitus have occurred as eruptive phenomena. Rarely, syringomas present in conjunction with inherited tumor syndromes, such as Brooke-Spiegler syndrome and Nicolau-Balus syndrome, typically presenting as multiple lesions along a broad clinical and histologic spectrum. We present a case of eruptive generalized syringoma in an 87-year-old male without an associated systemic or inherited syndrome. We review the literature and treatment modalities and discuss tumor syndromes and “paisley tie” tumors.

Introduction
Syringomas are benign adnexal neoplasms derived from intraepidermal eccrine ducts.1 Eruptive syringoma is a rare clinical variant that occurs in successive crops, typically on the anterior trunk of women, and is often resistant to therapy.2 To date, fewer than 70 cases have been reported in the English literature.2 First described by Biesiadecki and Kaposi, syringoma typically present as multiple small, firm, skin-colored to yellow papules, 2 mm to 4 mm in diameter, often asymptomatic and symmetric in distribution on the lower eyelids of women during adolescence or early adulthood. Syringomas have been reported in association with systemic syndromes, most commonly Down syndrome. Less commonly, clear-cell syringomas are found in association with diabetes mellitus. Rarely, syringomas occur in conjunction with inherited tumor syndromes, such as Brooke-Spiegler syndrome and Nicolau-Balus syndrome, in which lesions present along a broad clinical spectrum.1 Eruptive syringoma may clinically resemble milia, xanthomas disseminatum, trichoepithelioma, fibrofolliculomas, vellus hair cysts, flat warts, lichen planus, papular mucinosis, and cutaneous mastocytosis.4 However, the diagnosis can be made by its distinct histopathologic findings of small epithelial cords and dilated, cystic eccrine ducts with characteristic comma- or “tadpole”-shaped tails within the superficial dermis.5,6 These findings give the appearance of a “paisley tie” pattern on low magnification.7 The pathophysiology of syringoma remains unclear, although theories are reported in literature. Lesions can result in significant cosmetic disfigurement, and treatment options have been generally disappointing.

We present a case of late-onset eruptive syringoma in an 87-year-old male without associated systemic or familial syndromes. We offer a review of the literature, including a comparison of tumor syndromes, and discuss “paisley tie” tumors and optimal treatment modalities.

Case Presentation
An 87-year-old Caucasian man presented to our dermatology clinic with a one-week history of a “bumpy” rash located on the trunk, axillae, buttocks, and thighs. The lesions had occurred intermittently during early adulthood but were always limited to the axillae. The eruption was nontender and nonpruritic. He noted an increase in size and quantity of the lesions following perspiration or exposure to heat. Prior treatment included topical corticosteroid and antifungal, without improvement or resolution of lesions. He denied starting new medications. Medical history included dementia, coronary artery disease, hypertension, and dyslipidemia. Medications were noncontributory. He was a nonsmoker. He denied any family history of similar lesions or other skin disorders. History was verified by the patient’s power of attorney.

Physical examination revealed numerous, barely raised to thin, yellow-brown to reddish papules, about 1 mm to 4 mm in diameter, in a symmetric distribution involving the axillae, chest, abdomen, back, buttocks, and thighs (Figures 1, 2). Darier’s sign was negative. Provisional diagnosis included atypical Grover’s disease, cutaneous mastocytosis, xanthoma disseminatum, and resolving vasculitis.

Punch biopsy of a papule of the right axilla revealed a circumscribed proliferation of small epithelial cords and ducts within a sclerotic stroma of the superficial dermis. Characteristic dilated, cystic, comma-shaped eccrine ducts resembling “tadpoles” lined by two rows of flattened epithelial cells with a central lumina lined by compact eosinophilic cuticle were noted, findings consistent with syringoma (Figures 3, 4). No horn cysts, calcification, lymphoid aggregates, or perineural invasion were noted. Routine laboratory tests revealed normal findings except for hyperlipidemia and chronic anemia.

A diagnosis of generalized eruptive syringoma was confirmed based on clinical and histologic findings. The patient was reassured that syringomas are benign in nature. No treatment was indicated given his age and comorbidities; however, it was advised that the patient be monitored for the development of diabetes mellitus over time.

Discussion
Syringomas are benign adnexal neoplasms, historically interpreted as tumors of intraepidermal eccrine duct origin.4 Various types of syringomas present across a broad clinical spectrum, and rare presentations often pose a diagnostic challenge. Classification criteria proposed by Friedman and Butler1 divide syringomas into four variants based on clinical features: localized, familial, Down syndrome-associated, and generalized, inclusive of the eruptive type.

Syringomas typically present as multiple, slightly firm, skin-colored to yellow papules, 2 mm to 4 mm in diameter, often in a symmetric distribution in the periorbital region.1,5 Lesions have a predilection for the lower eyelids.6 Other affected sites may include the scalp, neck, chest, axillae, upper extremities, genitals, and groin.1,2 Studies have found an increased prevalence of lesions in unusual sites in familial cases, including the vulva, neck, and palms.1

![Figure 1](image1.png)
![Figure 2](image2.png)
Syringomas appear to occur most commonly in women during adolescence or early adulthood, as the lesions are removed more commonly from women than men; however, it is not clear that this represents authentic gender predilection. There is an increased incidence in Asian populations. In general, syringomas are asymptomatic, but they tend to persist indefinitely and are often resistant to therapy.

Many case reports document unusual clinical variants of syringomas. These include types limited to the scalp, associated with alopecia; a unilateral linear or nevoid distribution; those limited to the penis or vulva, mistaken for genital warts or as a cause of pruritus vulvae; and milia-like, with or without calcification. Rare “plaque-type” syringomas have been misdiagnosed as microcystic adnexal carcinoma, with other cases described as resembling lichen planus or lichen sclerosis. Familial syringomatosis, as an autosomal-dominant phenomenon, usually develops during adolescence and presents with varying morphologies, including plaque- or milia-type. Familial cases have also been reported in segmental distributions and in association with steatocystoma multiplex.

Eruptive syringoma is a rare variant that typically occurs in successive crops on the anterior trunk in women during adolescence or childhood. Lesions may occur on other areas of the body, including the scalp, genitals, axillae, and extremities. A recent systematic review of the literature on syringoma found that only 10% of cases presented in adults, with only 11% being eruptive and less than 8% occurring in males. Non-coalescing, hyperpigmented, eruptive papules have been noted on the chest, back and penis of skin type VI patients. Localized eruptive variants as reactive proliferations have been reported. These include on the face, as an inflammatory skin reaction; acral, as a photosensitive eruption; genital, over a recently waxed area; in association with eczema; as an antiepileptic-drug eruption; radiation-induced; and coexistent with renal cell carcinoma. Eruptive lesions tend to persist with time, though they may spontaneously involute and recur later in life. Of note, the diagnosis of syringoma was not clinically suspected in most cases of eruptive papular dermatosis at any age. Diagnosis of late-onset eruptive syringoma in men presents a particular challenge.

Syringomas have been reported in association with systemic syndromes. The incidence of syringoma has been reported in up to 40% of patients with Down syndrome, particularly females. The presence of calcification in these lesions may herald progression to calcinosis cutis. Diabetes mellitus is associated with clear cell syringoma, consisting of nests of clear cells containing glycogen as the result of aberrations in glucose metabolism. Syringoma in the context of tumor syndromes is rarely reported. These include Brooke-Spiegler syndrome, characterized by cylindromas, trichoepitheliomas, and spiradenomas; Nicolau-Balus syndrome, characterized by atrophoderma vermiculata and milia; and Costello syndrome, characterized by redundant lax skin, deep palmpoplantar creases, and papillomas. Cases associated with Marfan syndrome and Ehlers-Danlos syndrome have also been reported in the literature.

The pathophysiology of syringoma remains poorly understood, and treatment continues to pose a significant challenge. Although the term syringoma may technically be considered to indicate a neoplasm of eccrine or apocrine origin, it is not consistently confirmed such theories. The lack of female predominance in familial cases and recent immunohistochemical studies of progesterone and estrogen receptors have not consistently confirmed such theories.

Diagnosis of syringoma is confirmed by histologic findings of a circumscribed proliferation of small epithelial cords and dilated, cystic eccrine ducts lined by two layers of cuboidal cells embedded in sclerotic stroma of the superficial dermis. The cysts have comma-like tails, which produce a characteristic pattern resembling “tadpoles” or a “paisley tie.” Other common histologic findings include the absence of a deep infiltrative growth pattern or intraepidermal portion of eccrine ducts. Staining with anti-keratin antibodies EKH4 and EKH6 supports syringomas as arising from the basal layers of the epidermis, possessing eccrine secretory and ductal structures. Other proposed theories suggest syringomas are the result of a reactive eccrine hyperplasia rather than true neoplasms. The finding of associated lymphocytic infiltrates on histology suggests inflammation as a precipitating factor. Case reports of syringomas arising after eczematous eruptions and within “waxed” regions of the pubic area support this theory. It has also been postulated that eruptive syringomas may occur as a hamartomatous process, based on the finding of budding eccrine germs from the epidermis overlying lesions. In familial cases, inheritance is thought to be autosomal-dominant, resulting from loss of heterozygosity on chromosome 16q22.

Historically, syringomas were thought to be under hormonal influence, as lesions are removed from women more commonly than men; however, it is not clear that this represents authentic gender predilection. The presence of female predominance in familial cases and recent immunohistochemical studies of progesterone and estrogen receptors have not consistently confirmed such theories.

Table 1. Characteristics of paisley-tie tumors

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Desmoplastic trichoepithelioma</th>
<th>Microcystic adnexal carcinoma</th>
<th>Morpheaform basal cell carcinoma</th>
<th>Syringoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paisley-tie pattern</td>
<td>Yes</td>
<td>Yes</td>
<td>Sometimes superficially</td>
<td>Yes</td>
</tr>
<tr>
<td>Stroma</td>
<td>Red, sclerotic</td>
<td>Often red, sclerotic</td>
<td>Red, sclerotic</td>
<td>Red, sclerotic</td>
</tr>
<tr>
<td>Horn cysts</td>
<td>Common</td>
<td>Common</td>
<td>Occasional</td>
<td>May occur</td>
</tr>
<tr>
<td>Calciifications</td>
<td>Common</td>
<td>Common</td>
<td>Rare</td>
<td>Rare</td>
</tr>
<tr>
<td>Clefts between epithelium and stroma</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Central dell</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Lymphoid aggregates</td>
<td>Rare</td>
<td>Typical</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Perineural extension</td>
<td>No</td>
<td>Yes</td>
<td>Occasional</td>
<td>No</td>
</tr>
<tr>
<td>Shape</td>
<td>Broad</td>
<td>Broad</td>
<td>Broad</td>
<td>Small, round</td>
</tr>
<tr>
<td>Clinical appearance</td>
<td>Firm, doughnut-shaped tumor on cheek of young female</td>
<td>Firm plaque on upper lip, medial cheek, or chin</td>
<td>Scar-like plaque in elderly</td>
<td>Small papules on lower eyelids, often in Asian females and Down syndrome; clear cell syringoma associated with diabetes mellitus</td>
</tr>
</tbody>
</table>
ERUPTIVE SYRINGOMA: A CASE REPORT AND REVIEW OF “PAISLEY TIE” TUMORS

Eruptive syringoma may clinically resemble milia, lichen planus, flat warts, papular mucinosis, xanthelasma or xanthomas disseminatum, trichoepitheliomas, fibrofolliculomas, angiofibromas, milia, telangiectatic erythema, peripheral cyanosis, alopecia, and blepharitis; it may also present with trichoepitheliomas. Other inherited syndromes associated with the development of basal cell carcinoma include nevus basal cell syndrome, an autosomal-dominant disorder characterized by acrochordons, palmoplantar pits, odontogenic cysts of the jaw, bifid ribs, and central nervous system anomalies, including medulloblastoma and bilamellar calcification of the flax cerebri; Bazex syndrome, an X-linked dominant disorder characterized by follicular atrophoderma, milia, epidermal inclusion cysts, and hair-shaft defects; and, rarely, Brooke-Spiegler syndrome.13-15

Eruptive syringoma may occur in diverse clinical settings and result in significant morbidity, notably cosmetic disfigurement. Multiple syringomas may be associated with systemic conditions, primarily Down syndrome and diabetes mellitus. Rarely, syringomas may be the presenting sign of tumor syndromes. Disseminated lesions can be therapeutically challenging, and laser ablation may be the best option for surgical management.4 Combining CO2 lasers, using a pinhole or drilling technique, with medical therapies like TCA peels may present the most promising approach to increasing efficacy while minimizing undesirable side effects.1

Conclusion

Eruptive syringomas occur in diverse clinical settings and result in significant morbidity, notably cosmetic disfigurement. Multiple syringomas may be associated with systemic conditions, primarily Down syndrome and diabetes mellitus. Rarely, syringomas may be the presenting sign of tumor syndromes. Disseminated lesions can be therapeutically challenging, and laser ablation may be the best option for surgical management.4 Combining CO2 lasers, using a pinhole or drilling technique, with medical therapies like TCA peels may present the most promising approach to increasing efficacy while minimizing undesirable side effects.1

The goal of treatment is to improve the cosmetic appearance of these benign lesions, which may otherwise result in significant cosmetic disfigurement. Established medical and surgical interventions have reported variable success. Laser ablation is considered the optimal treatment modality for multiple syringomas. Carbon dioxide (CO2) lasers may be the most efficacious method, offering near-complete resolution with tolerable side effects, primarily transient dyspigmentation.22 The risk of scarring from nonspecific thermal damage of adjacent tissue may be reduced by using a pinhole or drilling technique. Combining CO2 laser with trichloroacetic acid (TCA) peels has been shown to synergistically stimulate the synthesis of type I collagen, further promoting tissue regeneration.23 Other destructive methods include fractional photothermolysis, Argon laser, surgical excision, electrocoagulation, cryotherapy, and dermabrasion. Due to the large number of lesions, low-voltage electrocoagulation and cryotherapy are often poorly tolerated and laborious, with unsatisfactory results. However, the use of intralesional insulated needles for electrocoagulation decreases the size and number of lesions while sparing epidermal damage and the resultant scarring and dyspigmentation. The long-term efficacy of electrocoagulation has yet to be determined, but it remains a viable option for the treatment of single or multiple syringomas.1 For larger lesions, punch excision may be considered.4 Because these are dermal neoplasms, the patient should be counseled that there is a risk of dyspigmentation, scarring, or recurrence with any selected treatment modality.7

Although medical therapies are rarely reported, recent treatment options include both topical and oral retinoid, topical atropine, and oral tranilast. Topical retinoid has resulted in thinner lesions with reduced erythema by normalizing cellular proliferation, differentiation, and keratinization.23 However, oral isotretinoin using variable dosing regimens has been reported with mixed results.1 Topical atropine, which inhibits sweat production, has resulted in significant reduction of both pruritus and size of lesions.1 The most common adverse effects of these topical regimens are erythema and dyspigmentation at the site of application.1 Less common side effects include pain and swelling. Alternatively, oral tranilast may improve the overall appearance of syringoma by suppressing the proliferation of connective tissue in lesions by inhibiting the release of interleukin-1 beta from eccrine ducts.24 The validity of medical therapies in the management of syringoma remains poorly defined, and consensus will require larger studies.

References


