## Title
A case report of adult-onset multiple angiokeratomas with zosteriform distribution



## Journal
Dermatology Online Journal, 24(10)

## Authors
Grewal, Arleen K
Chambers, Cindy J
Silverstein, Marc

## Publication Date
2018

## DOI
10.5070/D32410041729

# A case of adult-onset multiple angiokeratomas with zosteriform distribution

Arleen K Grewal[1] BS MS, Cindy J Chambers[2] MD MAS MPH, Marc Silverstein[1] MD

Affiliations: [1]Department of Dermatology, University of California Davis, Sacramento, California, USA, [2]Pacific Skin Institute, Sacramento, California, USA

*Corresponding Author: 3301 C Street, Suite 1400, Department of Dermatology, University of California Davis, Sacramento, CA 95816, Email: masilverstein@ucdavis.edu*

## Abstract

Angiokeratomas are benign vascular ectasias in the papillary dermis associated with epidermal changes in the form of hyperkeratosis and/or acanthosis. Clinically, angiokeratomas appear as solitary or multiple dark red to purple-black macules and/or papules, mostly with a verrucous surface. Five subtypes of angiokeratoma have been proposed — angiokeratoma corporis diffusum, angiokeratoma of Mibelli, angiokeratoma of Fordyce, angiokeratoma circumscriptum, and "solitary and multiple" angiokeratomas. We report an unusual case of multiple angiokeratomas in a zosteriform distribution with onset at age 74.

*Keywords: angiokeratoma, angiokeratoma circumscriptum, zosteriform, unilateral, mosaicism, elderly, adult, vascular lesions*

## Introduction

The prevalence of angiokeratomas has been reported as approximately 0.16% [1]. Overall, there is a slight male predominance and they are rarely seen in darker skin types. The "solitary and multiple" subtype may be located on any part of the body and typically appears in the second to fourth decades [2]. Well over 80% of cases that fall into this subtype are solitary. When multiple, they are more common on the lower legs, but generally do not show any recognizable clustering or patterning. Herein, we report an unusual case of adult-onset multiple angiokeratomas with zosteriform distribution in an elderly male [3].

## Case Synopsis

A 76-year-old man presented with a two-year history of lesions, which spontaneously developed on his right buttocks and posterior thigh. Physical exam revealed multiple 2-3mm purple papules on the right buttock (**Figure 1**) and right posterior thigh in addition to two typical, solitary angiokeratomas on the scrotum. The patient denied pain and itching of the lesions, but did report occasional bleeding. There was no family history of similar lesions. The patient's past medical history was significant for hypertension, monoclonal gammopathy of unknown significance, coronary artery disease/stent, and mitral valve repair.

A punch biopsy extending to the level of the deep reticular dermis was taken from the right buttock. Histopathological examination demonstrated thin-walled dilated vascular spaces in the papillary dermis surrounded by epithelial collarettes. There was variable hyperkeratosis and acanthosis (**Figure 2**). There was no endothelial cell atypia and no involvement of the reticular dermis. Based on the clinical and histopathological features, a diagnosis of multiple angiokeratomas with zosteriform distribution was made.

## Case Discussion

In 1889, the term 'angiokeratoma' was first coined by Vittorio Mibelli who used the term to refer to vascular lesions on the dorsum of the hands and feet in a 14-year-old girl [1]. At present, angiokeratomas are subdivided into five subtypes: (1) angiokeratoma corporis diffusum, typically associated with Fabry

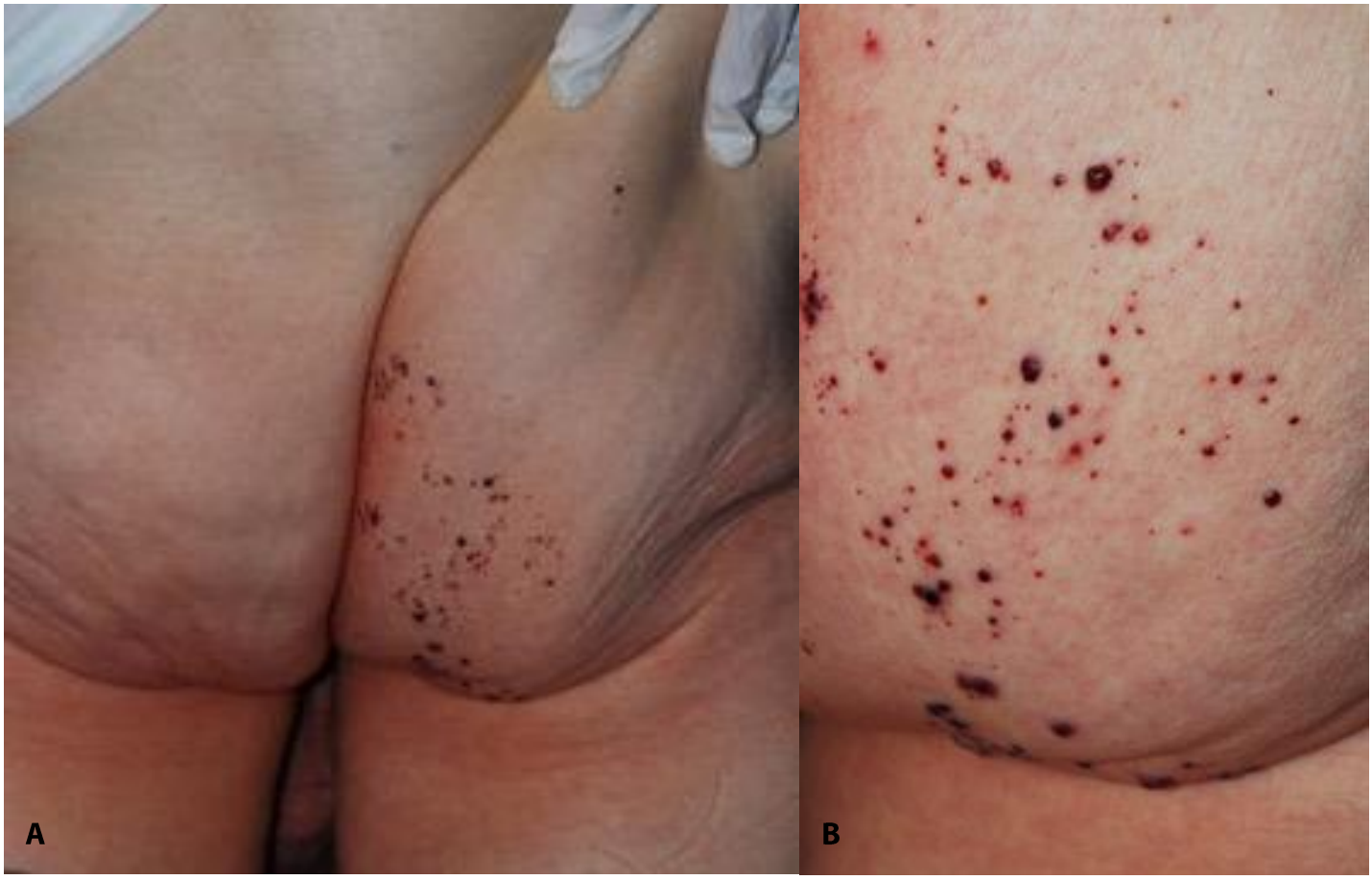


**Figure 1**. ***A)*** *Multiple 2-3mm purple papules on right buttock.* ***B)*** *Close-up view of lesions.*

disease; (2) angiokeratoma of Mibelli, occurring on acral regions and often associated with chilblains; (3) angiokeratoma of Fordyce, located on the scrotum and vulva; (4) angiokeratoma circumscriptum, nevoid and with an onset in early life; (5) solitary and multiple angiokeratoma. The latter is the most frequent subtype, with 83% of patients presenting with solitary angiokeratoma; the least frequent subtype is angiokeratoma circumscriptum [4]. The exact mechanism for the development of angiokeratomas is unknown but proposed causal factors include pregnancy, congenital causes, chilblains, trauma, and tissue asphyxia [2]. Though the aforementioned subtypes differ clinically from each other by location, morphology, and epidemiology, they can be histologically similar (**Table 1**).

Our patient does not fit in the category of angiokeratoma corporis diffusum owing to the late onset, localized distribution, and lack of any signs/symptoms of Fabry disease. Angiokeratoma of Mibelli is acral in distribution and is generally more plaque-like or hyperkeratotic. The patient does have two scrotal lesions in the S2 dermatome, raising the possibility of concurrent angiokeratoma of Fordyce. However, the predominant findings are extragenital and largely in the S3 and S4 dermatomes, which necessitates a separate diagnosis.

The individual lesion morphology in our case fits best with the "solitary and multiple" subtype of angiokeratoma, but the zosteriform distribution is distinctive. Similar cases have been reported in the past, but never at such a late age of onset. Eizaguirre et al. described two sisters with multiple angiokeratomas in zosteriform distribution, with an age of onset at age 10 and 12. We believe that our current case is similar to theirs, although at a much later onset.

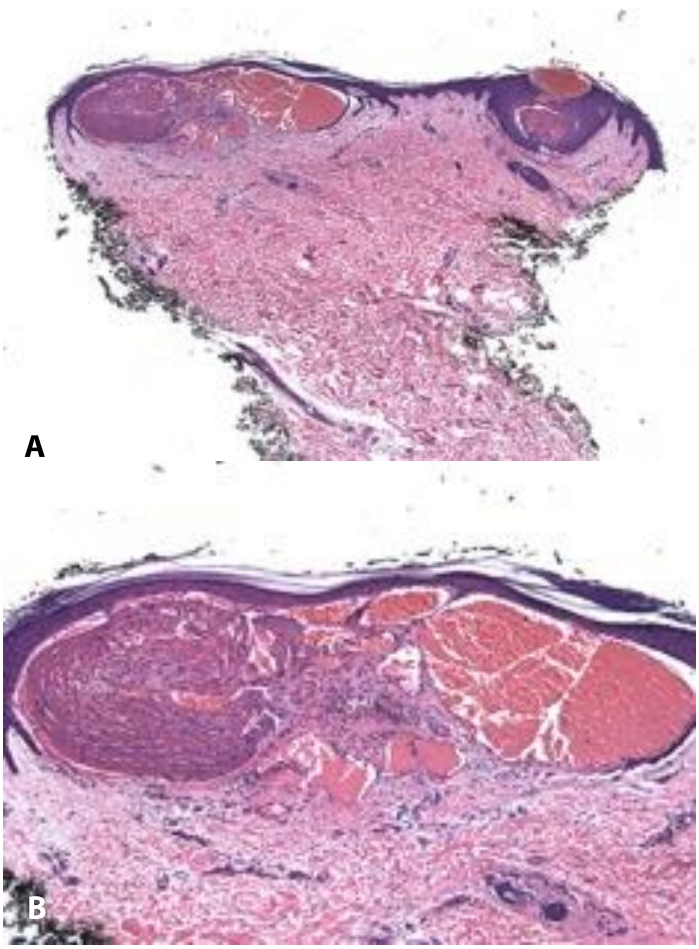


**Figure 2.** ***A)*** *A punch biopsy taken from the right buttock displaying epithelial collarettes around vascular spaces. H&E, 40×.* ***B)*** *vascular ectasias at the level of the papillary dermis abutting the epidermis. There is a male predilection. H&E, 100×.*

Given that the lesions are not strictly dermatomal, an alternative descriptive term of "agminated angiokeratoma" could be considered. Although this term has not previously been used in association with angiokeratomas, there is precedent for its use with other vascular tumors (**Table 2**).

A third interpretation would be very late onset angiokeratoma circumscriptum. This can certainly present with a linear pattern. However, this is most commonly seen at birth or a very young age, has a higher incidence in women, and often is described with a more plaque-like appearance [16]. Angiokeratoma circumscriptum is the least frequent among the five types of angiokeratomas. There are only scattered reports of late-onset angiokeratoma circumscriptum. Del Pozo presented two late onset cases [17]. The first is a female who presented with an asymptomatic, hyperkeratotic, violaceous plaque on her left buttock at the end of the first decade of life. The second patient presented with a similar lesion on her right buttock in the second decade of life. Kwon et al. reported a case of angiokeratoma circumscriptum developing on the chest of a man — in the third decade [18]. Interestingly, the lesion developed following injury to the area. In our current case, the individual lesion morphology is not plaque-like, but is that of typical solitary or multiple angiokeratomas, albeit in an unusual distribution. For these reasons, along with the very late onset, we believe the current case is most similar to the previously described "multiple angiokeratomas with zosteriform distribution" [4].

The etiology of this presentation is uncertain. The zosteriform distribution is suggestive of mosaicism. Bechara et al. postulated that perhaps the late onset could be explained by a secondary environmental factor superimposed on preexisting mosaicism [19]. Alternatively, the "late onset" could be analogous to the hypertrophy noted in late lesions of nevus flammeus [17]. However, the lack of any visible pre-existing lesion would argue against this.

Treatment of solitary or multiple angiokeratomas is often not needed owing to its clinically innocuous nature. For cosmetic purposes, small lesions may be managed by curettage and electrocautery, cryosurgery, and diathermy, whereas larger lesions may respond to laser ablation (carbon dioxide or argon laser), [17]. Given that our patient was asymptomatic, no treatment was undertaken.

## Conclusion

In summary, we present an unusual case of acquired angiokeratomas in an elderly gentleman that does not clearly fit within the standard classification scheme. Based on existing literature, we think it is best classified as "angiokeratomas with zosteriform distribution."

**Table 1**. *Angiokeratomas.*

| Diagnosis | Age | Sex | Location | Clinical presentation |
|---|---|---|---|---|
| Angiokeratoma corporis diffusum (Fabry syndrome) | Before puberty | Predominantly in males but also occurs in females | Dermis, heart, kidneys, autonomic nervous system | Clusters of small, red papules |
| Angiokeratoma of Mibelli | Childhood to adolescence | Both sexes, but predominantly in young girls | Bony prominences of hands and feet | Hyperkeratotic vascular lesion(s) |
| Angiokeratoma of Fordyce | Adulthood or second to third decades | Male | Genitals | Dark red papules of 2 to 5 mm in diameter with a discrete keratotic surface |
| Angiokeratoma circumscriptum | At birth | Both sexes | Trunk and/or legs | Dark red to blue-black nodules or plaques presenting unilaterally |
| Solitary and multiple angiokeratomas | Second to fourth decades | Both sexes | Any part of body | Single or multiple papular lesion(s) |

**Table 2**. *Grouped or agminated vascular lesions.*

| Diagnosis | Age | Sex | Location | Pathology | Clinical presentation |
|---|---|---|---|---|---|
| Verrucous hemangioma [6] | At birth | Both sexes | Distal parts of lower limbs | Dilated capillaries and large endothelial-lined, blood-filled spaces extending well into the reticular dermis and subcutaneous tissue with an overlying hyperkeratotic epidermis | Dark blue papules or nodules |
| Tufted angioma [7] | First year of life | Both sexes | Predominantly, on the neck and trunk. Occasionally, on the extremities. | Lobules or tufts of endothelial cells in the dermis | Red to purple coalescent papules or plaques |
| Kaposiform hemangioendothelioma [8] | Children | Both sexes | No apparent site preference | Tightly packed spindle cells and small oval capillaries in cannonball or glomerular nests. The tumor grows as irregular slit-like vascular spaces that dissect between normal dermal and subcutaneous tissues. | Multinodular soft tissue masses, purpuric macules, plaques, and multiple telangiectatic papules. |
| Spindle cell hemangioendothelioma [9] | Young adolescents | Both sexes | Typically, the distal extremity | Cavernous blood vessels intermixed with solid areas composed predominantly of spindle cells. | Solitary or multiple nodules that have a smooth surface, are skin colored or blue, and firm in consistency. |
| Multinucleate cell angiohistiocytoma [10] | Unknown | Females | Face and dorsal aspects of the hands | Vascular and histiocytic proliferations with dermal fibrosis | Erythematous to violaceous papules |

**Table 2, continued**. *Grouped or agminated vascular lesions.*

| | | | | | |
|---|---|---|---|---|---|
| Eccrine Angiomatous Hamartoma [11] | Children > adults | Both sexes, male predominance | Extremities> head neck and Trunk | Dilated eccrine glands associated with dilated capillaries | Variably sized patches plaques or nodules, red, blue, brown, or flesh-colored |
| Blaschko-linear "Congenital Mixed Hemato-lymphangio-keratoma Serpiginosum" Naeviforme [12] | 1 case reported, congenital | Female | Leg | Combined features of lymphagioma circumscriptum, angioma serpiginosa, and verrucous hemangioma | Combined red and yellow papules along lines of Blaschko |
| Agminated Eruptive Pyogenic Granuloma [13] | Young children | Both sexes | No specific predilection | Lobular vascular proliferation | Grouped red papules |
| Multiple agminated superficial arteriovenous haemangioma[14] | Adult | No known predilection | Scalp | Aggregates of thin-walled and thick-walled vessels, lined with a single layer of plump endothelial cells. | Clustered red papules |
| Unilateral Agminated Angiofibromas [15] | Adult | No known predilection | Face | Dermal proliferation of fibroblasts and capillaries | Unilateral discrete small red papules |
| Multiple angiokeratomas in zosteriform distribution [4] | Adult | Both sexes | Buttocks and thighs | Thin-walled dilated vascular spaces in the papillary dermis surrounded by epithelial collarettes with variable hyperkeratosis and acanthosis | Grouped small red papules in a unilateral and dermatomal distribution |

## References

1. Schiller P, Itin P. Angiokeratomas: an update. *Dermatol.* 1996;193:275-282. [PMID: 8993949].
2. Mittal R, Aggarwal A, Srivastava G. Angiokeratoma circumscriptum: a case report and review of literature. *Int J Dermatol.* 2005;44:1031-1034. [PMID: 16409270].
3. Ozdemir R, Karaaslan O, Tiftikcioglu Y, Kocer U. Angiokeratoma circumscriptum. *Dermatol Surg.* October 2004;30(10):1364-1366. [PMID: 15458538].
4. Eizaguirre X, Landa N, Ratón J, Díaz-Pérez J. Multiple Angiokeratomas with zosteriform distribution in two sisters. *Int J Dermatol.* 1994;33(9):641-642. [PMID: 8002162].
5. Requena L, Sangueza O. Cutaneous vascular anomalies. Part I. Hamartomas, malformations, and dilatation of preexisting vessels. *J Am Acad Dermatol.* 1997;37:523-49. [PMID: 9344191].
6. Tennant L, Mulliken J, Perez-Atayde A, Kozakewich H. Verrucous Hemangioma Revisited. *Ped Derm.* 2006;23:208-215. [PMID: 16780464].
7. Chu P, LeBoit P. An eruptive vascular proliferation resembling acquired tufted angioma in the recipient of a liver transplant. *J Am Acad Dermatol.* 1992;26(2):322-5. [PMID: 1569251].
8. Beaubien E, Ball N, Storwick G. Kaposiform hemangioendothelioma: A locally aggressive vascular tumor. *J Am Acad Dermatol.* 1998;38:799-802. [PMID: 9591789].
9. Tomasini C, Aloi F, Soro E, Elia V. Spindle cell hemangioma. *Dermatol.* 1999;199:274-76. [PMID: 10592415].
10. Nguyen A, Glembocki D, Patel N. Multinucleate cell angiohistiocytoma. *Cutis.* 2017;100:429-431. [PMID: 29360886]
11. Patterson AT et al. Eccrine Angiomatous Hamartoma: A Clincopathologic Review of 18 Cases. *Am J Dermatopathol.* 2016 38(6):413-417 [PMID: 26760684].
12. Tas B et al. Blaschko-linear "Congenital Mixed Hemato-lymphangio-keratoma Serpiginosum" Naeviforme, A New Hypbrid Entity or Various Morphological Reflections of the Two Different Vascualr Abnormalities? *J Clin Aesthet Dermatol.* 2018;11(5):43-47 [PMID: 29785239].
13. Baselga E et al. Agminated, Eruptive Pyogenic Granuloma-like Lesions Developing over Congenital Vascular Stains. *Ped Derm.* 2012;29(2);186-190. [PMID: 22066576].
14. Grunwald, M et al. Multiple agminated superficial arteriovenous haemangioma on the scalp. *J Eur Acad Dermatol Venereol.* 2003;17(5):496-597. [PMID: 12941107].
15. Anliker M et al. Unilateral Agminated Angiofibromas: A Segmental Expression of Tuberous Sclerosis? *Dermatol.* 1997;195:176-178. [PMID: 9310731].
16. Das A, Mondal A, Saha A, Chowdhury S, Gharami R. Angiokeratoma circumscriptum neviforme: an entitiy, few and far between. *Indian Dermatol Online J.* 2014;5(4):472-474. [PMID: 25396132].
17. Del Pozo J, Fonseca E. Angiokeratoma circumscriptum naeviforme: successful treatment with carbon-dioxide laser

vaporization. *Dermatolog Surg*. 2005;31:232-236. [PMID: 15762221].

18. Kwon N, Kim S, Kim G. A case of post-injury angiokeratoma circumscriptum of the chest. *Ann Dermatol*. 2010;22(1):66-68. [PMID: 20548886].
19. Bechara F, Happle R, Altmeyer P, Grabbe S, Jansen T. Angiokeratoma circumscriptum arranged in a systematized band-like pattern suggesting mosaicism. *J Dermatol*. 2006;33:489-491. [PMID: 16848823].