Acta Scientific Pharmacology

Volume 1 Issue 7 July 2020

Editorial

The Recherche' Ectasia- Angiokeratoma Circumscriptum

Anubha Bajaj*

Department of Histopathology, Panjab University/A.B. Diagnostics, India

***Corresponding Author:** Anubha Bajaj, Department of Histopathology, Panjab University/A.B. Diagnostics, India.

Received: May 28, 2020

Published: June 01, 2020

Preface

Angiokeratoma is a benign vascular ectasia confined to the papillary dermis accompanied with hyperkeratosis, papillomatosis and acanthosis of superimposed epidermis. Angiokeratoma demonstrates a characteristic appearance of a superficial, vascular ectasia in concurrence with hyperplasia, acanthosis or hyperkeratosis of overlying epithelium. Angiokeratomas can occur in a variety of clinical settings. Lesions can be solitary or multiple and diffuse [1].

Angiokeratoma appears as a miniature, red to purple papule with a rough, scaly extraneous surface and is comprised of superficial blood vessels distributed as dilated capillaries. Angiokeratoma can depict superficial crusting or traumatic haemorrhage or occur as a thrombotic spheroid with rapid discolouration to dark purple or black [1].

Angiokeratoma can occur as black spots and occasionally simulate lesions of malignant melanoma. Therefore, a cogent tissue sampling is required to exclude malignant metamorphoses. Angiokeratoma is an innocuous, surface vascular lesion which may not necessitate therapeutic intervention [1,2].

Disease pathogenesis

Fabry disease or angiokeratoma corporis diffusum is engendered on account of a genomic defect. However, genesis of diverse variants of angiokeratomas remain obscure.

Mechanism for incurrence of angiokeratoma circumscriptum is unknown. Possibly, determinants such as altered haemodynamic factors, chronic trauma, tissue asphyxiation, congenital elements, pregnancy or chilblains can engender vascular ectasia within the papillary dermis, principally underneath the basement membrane. Reactive epidermal alterations amplify with enhancing age and appear subsequent to vascular ectasia. Essentially benign, the condition is disassociated with systemic disease. Exceptionally, angiokeratoma circumscriptum appears concurrent to Klippel-Trenaunay syndrome or Cobb syndrome [1,2].

Disease characteristics

Angiokeratoma depicts five distinct clinical representations cogitated as:

- Idiopathic solitary or multiple angiokeratomas
- Angiokeratoma of Mibelli
- Angiokeratoma of Fordyce
- Angiokeratoma corporis diffusum
- Angiokeratoma circumscriptum.

Aforesaid variants demonstrate an identical histology [1,2].

Sporadic angiokeratoma delineates solitary lesions and is frequently discerned beyond 40 years.

Angiokeratoma of Mibelli exhibits multiple, red to blue, dry to warty papules situated upon dorsum of fingers, toes, hands, feet or rarely upon knees, elbows and breasts. Lesions are associated with chill blains, can haemorrhage with minor trauma, appear in children or adolescents and demonstrate a female predominance. The condition can be familial [2].

Angiokeratoma of Fordyce frequently incriminates cutaneous surfaces of the scrotum. Also, shaft of penis, labia majora of vulva, cutaneous surfaces of inner thigh or lower abdomen can be implicated. The condition is prevalent in elderly individuals or subjects exceeding > 40 years. A male predominance is observed. A singu-

lar lesion or multiple lesions exceeding a > 100 are encountered. Lesions are miniature, red and mildly scaly in younger individuals whereas elderly subjects demonstrate enlarged, blue- black lesions with superimposed, extraneous scales. Angiokeratoma of Fordyce is usually asymptomatic and is commonly discerned upon haemorrhage following scratching or sexual intercourse [2,3].

Angiokeratoma corporis diffusum delineates clusters and aggregates of papules with a penchant for "bathing suit distribution". The condition is associated with Anderson- Fabry disease which is an X-linked recessive, lysosomal storage disease.

Angiokeratoma corporis diffusum is also cogitated as Fabry disease which is an exceptional, severe, inherited disorder engendered by deficiency of ceramide trihexosidase, an alpha-galactosidase enzyme. Consequently, excessive quantities of glycosphingolipids are accumulated within blood vessels and internal organs. The condition demonstrates an enhanced severity in males, in contrast to females. Emerging angiokeratomas are disseminated widely and numerous lesions are displayed upon lower trunk or groin. Lesions are accompanied with pyrexia and pain within extremities, hands or feet.

Fabry disease can produce corneal opacities, renal failure, heart failure, stroke, arthritis and colitis apart from several conundrums [2,3]. Angiokeratoma circumscriptum is an infrequent, predominantly a congenital disorder although lesions can appear in a subsequential manner. Angiokeratoma as a group of conditions is devoid of a racial predisposition although an overall, slight male predominance is observed. However, angiokeratoma circumscriptum demonstrates a female preponderance with a female to male proportion of 3:1.

Angiokeratoma circumscriptum appears as a rare birthmark or a vascular malformation. The condition can emerge at birth or disease emergence can be delayed to childhood or adulthood [2,3].

Clusters and aggregates of lesions can arise as miniature patches situated upon extremities or trunk. Lesions can gradually darken in colour and demonstrate modifications in magnitude and configuration. Angiokeratoma circumscriptum is frequently accompanied by Klippel-Trenaunay syndrome (KTS) which manifests as a venous malformation, limb- associated port wine stain and concomitant soft tissue swelling with bone hypertrophy. Exceptionally, angiokeratoma circumscriptum can replace a port wine stain as a component of the syndrome [3,4].

Adjunctive entities concurrent with angiokeratoma circumscriptum are Cobb syndrome, nevus flammeus, cavernous haemangioma and traumatic arteriovenous fistula [4].

Clinical elucidation

Angiokeratoma circumscriptum is an exceptional variant and initially represents as typical, congenital, red- coloured macule. The lesion gradually metamorphoses into dark red to blue, violaceous nodule or plaque accompanied with warty and/or hyperkeratotic morphological features. The nodule commonly arises unilaterally upon lower extremities although adjunctive sites such as trunk, neck, scrotum or tongue can be incriminated [3,4].

Angiokeratoma circumscriptum typically implicates cutaneous surfaces of lower extremity, usually the buttocks or thigh. Angiokeratoma circumscriptum appearing at birth commonly manifests as multiple, erythematous macules which gradually metamorphose into dark- red or violaceous, keratotic papules with a subsequent coalescence into discreet plaques. Characteristic plaques of variable magnitude can expand from a few centimetres to enclosing an estimated one fourth of body surface area. Lesions are accompanied by occasional haemorrhage or pain upon minimal trauma [3,4].

Upon examination, incriminated areas are well circumscribed, firm, non-pulsatile, non-compressible and tender on palpation. Angiokeratoma circumscriptum lacks a predisposition to spontaneous regression [4].

Histological elucidation

Accruement of a deep-seated tissue sample is essential for accurate diagnosis. On macroscopic examination, aggregates of miniature, red to brown or black, papules or nodules with a verrucous extraneous surface can be discerned [4].

Angiokeratoma circumscriptum can delineate distended capillaries in the papillary dermis accompanied with vascular outflow within dilated venules. Epidermis superimposed upon dilated blood vessels demonstrates acanthosis, hyperkeratosis and elongated rete ridges.

Emergent vascular ectasia of papillary dermis can expand into the superficial epidermis which encompasses distended vascular spaces. Superimposed epidermal hyperplasia is denominated by

acanthosis, hyperkeratosis and elongation of the rete ridges. Vascular thrombosis is frequently discerned within enunciated vascular ectasia [5,6].

Ultrastructural examination of angiokeratoma demonstrates accumulation of pericytes and smooth muscle cells whereas Anderson-Fabry disease can delineate lipid bodies and lamellar inclusions confined within endothelial cells [5].

Investigative assay

An adequate clinical representation is indicative of angiokeratoma circumscriptum which can be confirmed upon cogent histological examination. Classically, vascular ectasia comprised of thin- walled vascular channels confined to the papillary dermis accompanied with acanthosis and hyperkeratosis of superimposed epidermis is delineated. Aforesaid vascular channels are frequently thrombosed, a feature which morphologically manifests as blood vessels impacted with red cell extravasation [5,6].

Physical examination of plaques of angiokeratoma circumscriptum can simulate a melanoma wherein thrombosed blood vessels contribute to a darkly stained lesion.

Ultrasonography of angiokeratoma circumscriptum demonstrates a linear, hypoechoic, mildly vascular soft tissue mass unrelated to underlying bony tissue. Usually, further investigation is unnecessary. Multiple lesions appearing within the lumbosacral region with spinal superimposition in a new-born or an infant can be subjected to a magnetic resonance imaging (MRI) of the spine to exclude spinal dysraphism or Cobb syndrome [6].

Differential diagnosis

Angiokeratoma circumscriptum requires a segregation from lesions such as verrucous haemangioma, melanocytic nevus, malignant melanoma, lymphangioma circumscriptans, capillary aneurysm, pigmented basal cell carcinoma and Spitz nevus. Angiokeratoma necessitates a demarcation from conditions such as lobular, capillary or verrucous haemangioma, lymphangioma, or venous lake [6,7].

Verrucous haemangioma appears clinically and morphologically identical. Nevertheless, angiokeratoma circumscriptum is confined within the papillary dermis, is devoid of incrimination of deep-seated dermis or subcutaneous tissue whereas verrucous haemangioma characteristically incriminates deep-seated dermis, hypodermis and subcutaneous tissue [6].

Differentiation from clinical conditions such as pigmented or melanocytic lesions is contingent to occurrence of vascular thrombosis [6].

Prognostic outcomes

Angiokeratoma circumscriptum can be permanently exterminated with the application of a laser or surgical intervention. Reoccurrence of lesion is exceptional [7].

Complications of laser therapy, cryotherapy, electrocautery or diathermy adopted for angiokeratoma circumscriptum are denominated by textural or post -inflammatory pigmentary modifications. Besides, typical complications of a surgical intervention such as appendicular or axial disfigurement, contingent to location, can ensue with eradication of enlarged plaques of angiokeratoma circumscriptum [7].

Therapeutic options

Therapeutic intervention in angiokeratoma circumscriptum is advocated for managing recurrent, traumatic haemorrhage and for superior cosmetic outcomes. Strategies such as diathermy, curettage, electrocautery, cryotherapy, laser therapy, cryosurgery or surgical extermination of miniature papules or plaques can be considered. Enlarged plaques can be managed with cogent laser ablation as surgical extermination can induce significant disfigurement [7].

Several lasers are efficacious in treating angiokeratoma circumscriptum such as argon laser, carbon dioxide laser, cooper vapour laser, neodymium-doped yttrium-aluminium-garnet (Nd:YAG) laser, pulsed-dye laser or an intense pulsed light source system. Typically, laser therapy is commenced with carbon dioxide or erbium laser in order to decimate the hyperkeratotic epidermis. Subsequently, a laser with haemoglobin incrimination such as potassium titanyl phosphate (KTP) or pulsed- dye laser can be adopted. Carbon dioxide lasers are considered as precise in treating depth and surface area of lesion, display an optimum operative speed within the procedure, maintain adequate haemostasis and are accompanied by minimal postoperative pain or oedema [7,8].

Non-ablative laser systems such as a pulsed-dye laser, cooper vapour laser, pulsed argon laser or an Nd:YAG laser typically necessitate several therapeutic sessions in order to achieve a comprehensive eradication of lesion and incriminated cutaneous surfaces. Approach to superficial dermis with aforesaid lasers can be challenging on account of hyperkeratotic epidermis superimposed upon the lesions of angiokeratoma circumscriptum [7,8].

Ablative laser systems such as carbon dioxide laser or continuous- wave argon laser can extend into superficial dermis in a singular session. Textural and pigmentary modifications are frequent with ablative laser therapy [7,8].

Emerging complications are minimized with the adoption of conservative therapeutic techniques, cogent awareness and education accompanied by adequate post-operative diligence [7,8].

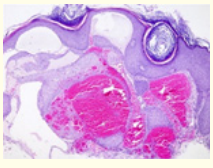

Figure 1: Angiokeratoma with vascular ectasia and thrombosed blood vessels confined to the papillary dermis with circumscribing epithelium and acanthosis with hyperkeratosis of superimposed epithelium [9].

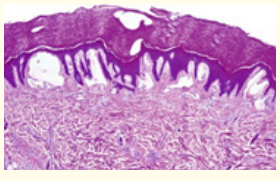

Figure 2: Angiokeratoma with vascular ectasia and intermingled squamous epithelium with acanthotic, hyperkeratotic superimposed epidermis [10].

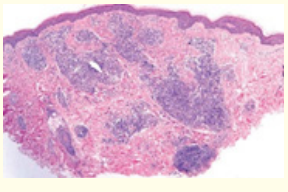

Figure 3: Angiokeratoma with vascular ectasia, blood vessels lined by a thin endothelium and an encompassing epidermal component with acanthosis of the superimposed epithelium [11].

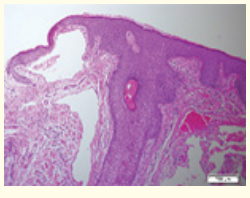

Figure 4: Angiokeratoma with vascular ectasia, blood vessels layered with attenuated epithelium, encompassing epithelial islands with acanthosis of superficial epidermis [12].

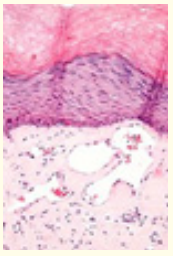

Figure 5: Angiokeratoma demonstrating vascular ectasia, foci of haemorrhage and an acanthotic, hyperkeratotic epidermis [13].

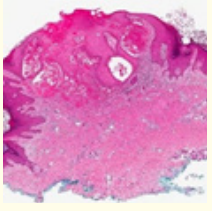

Figure 6: Angiokeratoma depicting vascular ectasia, red cell extravasation, distended vascular spaces, epithelial circumscription and hyperkeratotic superficial epithelium [14].

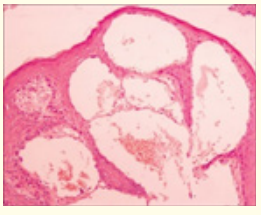

Figure 7: Angiokeratoma delineating dilated vascular configurations, red cell extravasation, enveloping epidermal nests and acanthotic superficial epithelium [15].

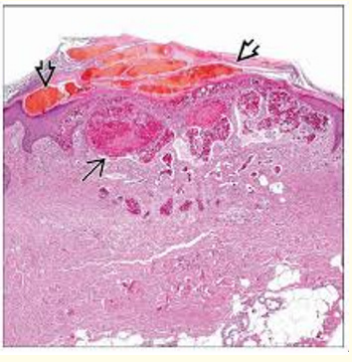

Figure 8: Angiokeratoma exhibiting vascular ectasia, dilated blood vessels lined by thinned out endothelium, epithelial circumscription and epidermal acanthosis with hyperkeratosis [16].

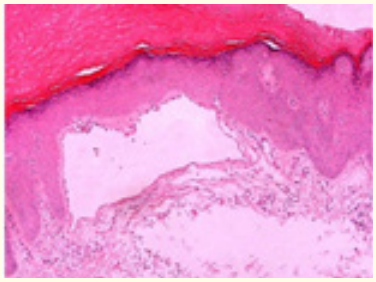

Figure 9: Angiokeratoma displaying vascular ectasia, dilated blood vessels, epidermal circumscription and acanthosis with hyperkeratosis of superficial epidermis [17].

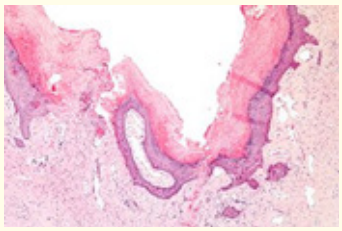

Figure 10: Angiokeratoma with prominent hyperkeratosis, acanthosis, dilated vasculature and epithelial rimming [18].

Bibliography

1. Schiller PI and Itin PH. "Angiokeratomas: an update". *Dermatology* 193.4 (1996): 275-282.
2. Ivy H and Julian CA. "Angiokeratoma Circumscriptum". Stat Pearls, Treasure Island, Florida (2019).
3. Brightman LA., *et al*. "Laser treatment of port-wine stains". *Clinical, Cosmetic and Investigational Dermatology* 8 (2015): 27-33.
4. Ozdemir R., *et al*. "Angiokeratoma Circumscriptum". *Dermatologic Surgery* 30.10 (2004): 1364-1366.
5. Liuchang T., *et al*. "Angiokeratoma circumscriptum of children- a case of post injury with a lesion on the foot". *Indian Journal of Paediatric Dermatology* 21.1 (2020): 45-46.
6. Kwon NH., *et al*. "A case of post-injury angiokeratoma circumscriptum of the chest". *Annals of Dermatology* 22.1 (2010): 66-68.
7. Feramisco JD., *et al*. "Eruptive angiokeratomas of the glans penis". *Dermatology Online Journal* 15.10 (2009): 14.
8. Wang H., *et al*. "Variant distribution of skin lesions in angiokeratoma circumscriptum- report of an untypical case". *Journal of Medical Cases* 3.5 (2012): 297-299.
9. Image 1 Courtesy: Pathology outlines.
10. Image 2 Courtesy: Science direct.
11. Image 3 Courtesy: Sceilo.com.
12. Image 4 Courtesy: MDedge.
13. Image 5 Courtesy: Wikiwand.
14. Image 6 Courtesy: Twitter.com.
15. Image 7 Courtesy: JCAS.
16. Image 8 Courtesy: Basic medical key.
17. Image 9 Courtesy: Journal of Medical Cases.
18. Image 10 Courtesy: Libre Path.