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The Allocated Acrosyringium - Eccrine Poroma

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Abstract

Benign tumour of the acrosyringium and intra-epidermal portion of sweat gland duct is denominated as a poroma, a lesion which simulates adjunctive dermal adnexal tumours, particularly in the head and neck region. Eccrine poroma is exceptional and comprises of 10% of sweat gland neoplasm. Generally, a solitary, skin coloured pink, red, white, violet tinged, brown or blue, painless, firm, dome shaped papule, plaque, nodule, tumefaction or a pedunculated or sessile mass with a smooth or verrucous exterior surface is enunciated. Poroma is constituted of uniform, dark- staining, basophilic, cuboidal epithelial or poroid cells with interconnecting cellular bridges and a lack of peripheral palisade, which proliferate within the basal epidermal layer to configure broad, anastomosing dermal projections. Immune reactivity to cytokeratins 5 and 14 (CK5 and CK14), carcino-embryonic antigen (CEA) and epithelial membrane antigen (EMA) are exhibited.

Keywords: Poroma sweat gland; Eccrine; Intra-epidermal; pure dermal neoplasm

Introduction

A benign tumour arising from acrosyringium and intra-epidermal portion of sweat gland ducts is designated as a pogrom Poroma can also be described as a benign tumour engendered from ducts of intra-epidermal sweat glands with a sweat pore, an orifice situated on the skin surface. Poroma simulates adjunctive dermal adnexal tumours, particularly in the head and neck region. Eccrine poroma was initially characterized by Pinkus et al. in 1956 and cogitated as tumour originating from eccrine sweat glands, although an apocrine element is also implied. Eccrine poroma incriminates unspecified, random cutaneous surfaces although acral sites are preponderant. Eccrine poroma colludes with the extended classification of acrospiroma which incorporates lesions such as dermal duct tumours, hidroacanthoma simplex, nodular clear cell and poroid hidradenoma[1,2].

Disease Characteristics: Poroma is constituted by a coterie of benign adnexal neoplasm with a cellular proliferation comprised of terminal segment of sweat gland duct- the cells being cogitated as poroid cells. Apocrine equivalent of the poroma has also been aptly designated. Benign adnexal tumours including eccrine poroma can enlarge during pregnancy. Poromas are frequently cogitated on the palms and soles on account of an overabundance of sweat glands. Poroma can appear on the trunk, face and neck. However, poroma is infrequent in oral, maxillofacial or head and neck region. Emergence of multiple poromas is cogitated as poromatosis. Multiple, disseminated eccrine poromas are denominated as eccrine poromatosis and arise in subjects exposed to radiation and chemotherapy[2,3]. Eccrine and apocrine sweat gland tumours constitute an estimated 1% instances of primary cutaneous lesions. The exceptional eccrine poroma comprises approximately of 10% of sweat gland neoplasm. An estimated 65% lesions appear on the sole of the foot and around 10% instances arise on the hands, regions with an enhanced aggregation of eccrine sweat glands. Appendageal skin tumours of the head and neck region arise with an estimated frequency of 0.8%. An estimated 18% eccrine poroma depict malignant transformation to an eccrine porocarcinoma. Exceptional sites include the neck, chest, forehead, nose and scalp. Frequently cogitated in middle aged and elderly subjects, poroma depicts an equivalent gender

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and racial predilection. Poromas of the maxillofacial or head and neck region necessitate a demarcation from common cutaneous lesions such as basal cell carcinoma and seborrheic keratosis. Appendageal skin neoplasm requires a distinction from adjunctive cutaneous neoplasm arising on the face. Chronic radiation exposure augments the development of poroma. Poroma can be detected in individuals subjected to electron beam therapy for treating mycosis fungoides or sequential to chronic radiation dermatitis. Poroma can occur in association with pre-existing skin disorders particularly hyper-hidrotic ectodermal dysplasia, Bowen's disease and infrequently, nevus sebaceous. Trauma and viral (HPV) infection are also implicated in the genesis of poroma.

Modifications in the physiologic functions of dermal appendages, activation of eccrine glands on account of pregnancy or adjunctive probable factors are implicated in the pathogenesis. Asymptomatic, pigmented lesions are common in head and neck region rather than extremities[3,4].

Poroma emerging on the extremities are generally pigmented, painful, produce haemorrhage, discharge and rapid progression. In contrast, poroma of the head and neck region infrequently generate pigmentation, haemorrhage, discharge, pain and quick progression of the lesion. Poroma of pregnancy also progress rapidly. Benign eccrine pogrom can convert into malignant eccrine porocarcinoma on account of immune suppression, particularly pregnancy. Comprehensive surgical excision and subsequent microscopic examination are essential. Eccrine poroma necessitate adequate post- operative monitoring to prevent tumour reoccurrence as it can predispose to malignant conversion. Eccrine poroma can progress to malignant poroma or porocarcinoma in a mean duration of 8.5 years[3,4].

Clinical Elucidation: Poroma typically presents as a solitary , skin coloured pink, red, white, violet tinged, brown or blue gradually enlarging, painless, firm, dome shaped papule, plaque, nodule, benign tumefaction, a pedunculated or sessile mass with a smooth or verrucous exterior surface depicting superficial ulceration and multiple, papillary projections. Lesions range from a magnitude of 1.5 to 3.5 centimetres. Tumours can appear as a protuberant growth arising from a cup shaped concavity.

Lesions are generally asymptomatic. Pain and itching can occur. Poromatosis depict multiple acral or disseminated poromas at initial presentation. As an eccrine poroma depicts a variable morphology and emerges on sweat glands containing skin, it can be misdiagnosed on clinical grounds[4,5].

Histological Elucidation: Tumefaction is gray/white and firm with a smooth, homogenous external surface. An appropriate microscopic elucidation is diagnostic. A well circumscribed tumour, poroma is composed of cuboidal epithelial or poroid cells which proliferate and extend from the basal epidermis into the dermal layer. Contingent to localization of poroid cells within the epidermis, a poroma is further classified as an acrospiroma, a lesion which demonstrates pertinent variants. Lesions completely juxtaposed to the epidermis are elucidated in hidroacanthoma simplex or comprehensively intra-epidermal lesions are delineated in dermal duct tumour. Poroid and nodular hidradenoma are especially confined to the dermal layer and are categorized according to eccrine or apocrine differentiation.

Tumefaction arises in inferior epidermis to project into the dermis and is conjoined to epidermis with strips of epithelium. Solid accumulates of miniature, cuboidal, basaloid cells with deeply basophilic nucleus are cogitated[5,6].

Contingent to the architectural pattern, poromas are categorized as:

- Hidroacanthoma simplex or intra-epidermal poroma where the tumefaction is confined to the epidermis.
- Eccrine poroma where tumour cell proliferation expands from epidermis into superficial dermis.

Pure dermal type neoplasm where tumefaction is situated in the dermis, is devoid of epidermal continuity and depicts subtypes such as: dermal ductal tumour comprising of solid cellular aggregates of poroid cells and cuticular cells, poroid hidradenoma which displays a solid- cystic configuration.

Cellular exudates comprise of homogenous, cubical epithelium with round, basophilic nucleus, indistinct nucleolus and discernible intercellular bridges. Demarcation betwixt tumour and intervening stroma is well defined. Tumour cells manifest a cogent quantity of glycogen with demonstrably clear cytoplasm and reactivity to periodic acid Schiff's stain (PAS positive)[6,7]. Histology reveals accumulations of tumour cells emerging in the epidermis with dermal projections of broad, anastomosing cellular bands. Tumour cells are constituted of uniform, dark- staining, basophilic, cuboidal poroid epithelium with interconnecting cellular bridges and a lack of peripheral palisade. Mitosis is infrequent and cellular atypia is absent. Poroid cells are distinct from adjacent keratinocytes situated within the epidermis. Characteristically, cells can depict a compact, eosinophilic cytoplasm which is reactive to periodic acid Schiff's stain (PAS positive).

Duct like articulations enveloped in a supporting stroma of disseminated collagen fibres and fibroblasts are occasionally elucidated. Vasculature can be abundant with a moderate, chronic inflammatory infiltration. Articulations reactive to periodic acid Schiff's stain (PAS positive) are cogitated. Melanin and tonofilaments are absent in the tumour cells. Intracytoplasmic and intercellular vacuoles are typical attributes simulating the configuration of eccrine ducts and aid in the distinction from basal cell carcinoma and seborrheic keratosis. The essentially benign condition can depict necrosis, minimal mitosis and stromal vascularisation. Cuticular cells display miniature nuclei and pale- staining cytoplasm[7,8].

Essentially benign poromas infrequently depict morphological characteristics delineated in the malignant counterpart such as varying mitotic figures, extensive foci of tumour necrosis and a vascular stroma Poroma can display a clear cell change comprising of miniature nuclei with encompassing pale cytoplasm. Poroid and cuticular cell accumulates can depict tubular or ductal arrangements. Ductal differentiation can be diverse amidst poromas as multiple ductal foci are enunciated or the elucidation of aforesaid can be challenging. Poroma configuring tubular articulations, columnar cell layering and a holocrine effluvium is characteristic of apocrine differeniation. Poroma exhibiting sebaceous differentiation is cogitated to be of folliculosebaceous- apocrine ancestry[7,8].

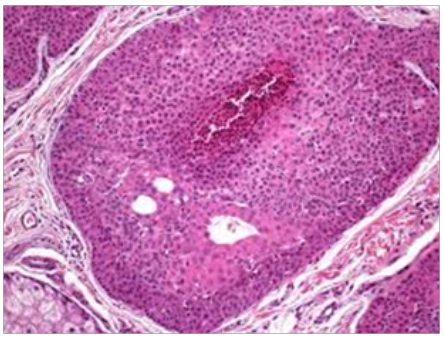

Figure 1: Pigmented eccrine porome with aggregates of miniature, basaloid cells, dense nuclei and segregated stroma[13].

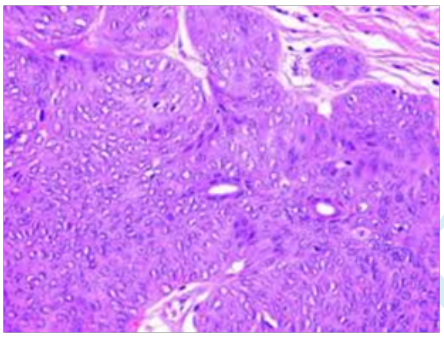

Figure 2: Eccrine poroma with accumulated clear, cuboidal epithelium in broad bands[14].

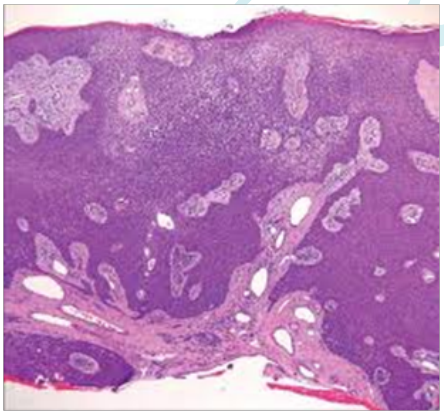

Figure 3: Eccrine poroma with epithelial clusters configuring invaginations and dense cellular clusters[15].

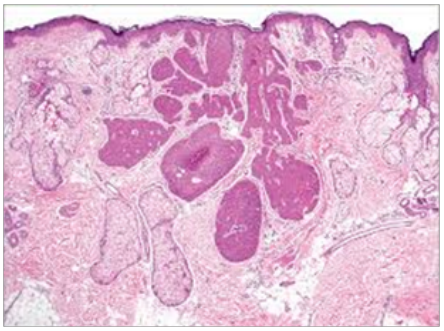

Figure 4: Eccrine poroma - accumulates of cuboidal epithelium with eosinophilic cytoplasm and segregated, surrounding stroma[16].

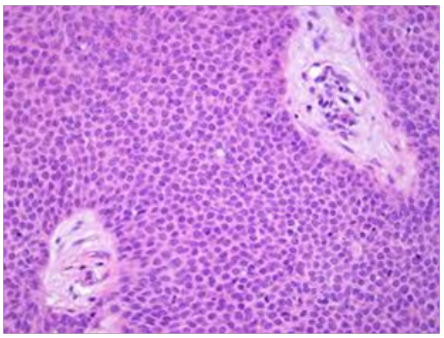

Figure 5: Eccrine poroma- sheets of basaloid cuboidal epithelium, basophilic nuclei and indistinct nucleoli[16].

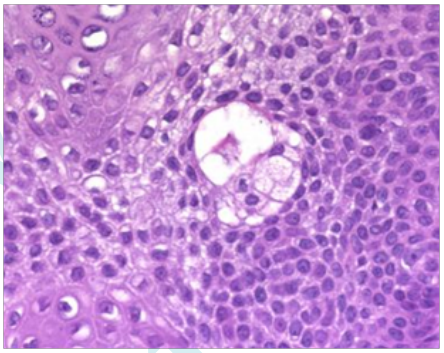

Figure 6: Eccrine poroma-admixture of basaloid cells, clear cells and epithelial aggregates[17].

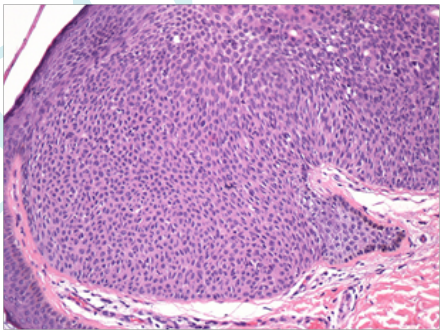

Figure 7: Eccrine poroma – monomorphic , basaloid epithelial cells with distinct stromal circumscription[18].

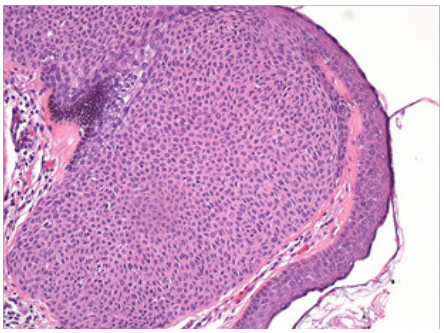

Figure 8: Eccrine poroma –confluent sheets of basaloid cells and adherent superficial squamous epithelium[19].

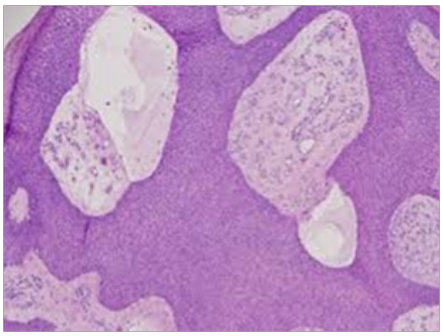

Figure 9: Eccrine poroma- stalks and straps of monomorphous cuboidal epithelium and intervening fibroconnective stroma[19].

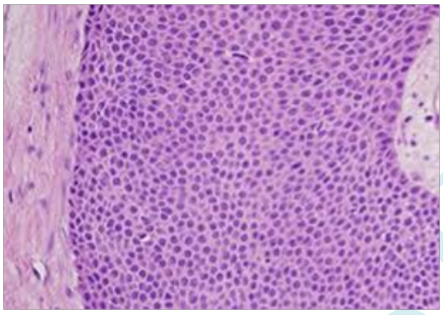

Figure 10: Eccrine poroma –honeycombed nests of basaloid and clear cells with scant, enveloping stroma[20]

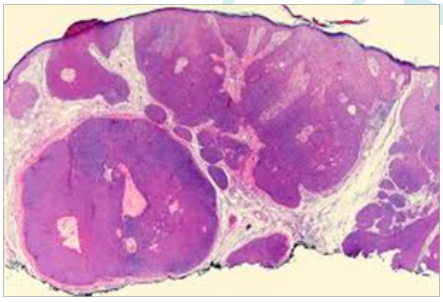

Figure 11: Eccrine poroma- nests, invaginations, cup-like configurations and solid foci of miniature, cuboidal, basaloid cells[21].

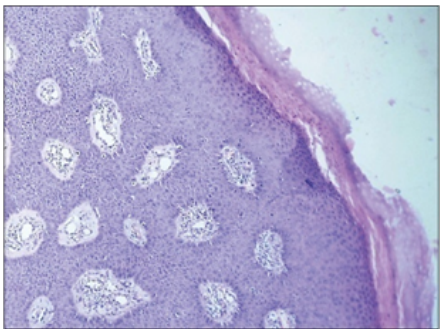

Figure 12: Eccrine poroma –expanse of cuboidal epithelium with stromal papillae[23].

Immune Histochemical Elucidation: On immune reactions, a ductal origin is indicated for eccrine poroma. Tumour cells are immune reactive to cytokeratins 5 and 14 (CK5 and CK14) appearing in the cytoplasm, carcino-embryonic antigen (CEA) and epithelial membrane antigen (EMA). Immune staining with carcino-embryonic antigen (CEA) can discern and segregate eccrine and apocrine ducts. Tumour is generally devoid of reoccurrence[2,3].

Investigative Profile: Dermatoscopy is cogent in the distinction of pigmented lesions. Poromas devoid of pigmentation can manifest a preponderant and diagnostic vascular configuration. Vascular arrangement depicts polymorphic, glomerular, linear-irregular vessels, leaf and flower pattern like and looped or hairpin variants of vasculature. Polymorphic, vascular articulation can be concomitantly depicted in lesions such as melanoma and requires additional investigation. Leaf and flower like configuration are characteristic of the poroma.

Arborizing blood vessels are predominant in basal cell carcinoma, in contrast to the vascular configuration of a poroma, thus indicating that vasculature of poroma is deep seated within the dermis. White to pink halo is a predominant feature of an eccrine poroma on account of fibrinoid oedema which circumscribes the vascular dilatation of the neoplasm. Vascular blush, secondary vasodilatation and enhanced vascular volume of the tumefaction, amorphous region and intertwined, whitish cord like configuration is additionally cogitated and characteristic to the poroma[9,10]. Whitish cords can occasionally be elucidated in melanoma. As dermatoscopic configuration of eccrine poroma can demonstrate significant discrepancy, a histological elucidation is conclusive and reliable[9,10].

Molecular characterisation of poroma is attained with the elucidation of p53 protein. Extent of molecular exemplification is categorized as; low where an estimated <5% of immune reactive tumour cells are discerned moderate with the disclosure of 5% to 50% immune reactive tumour cells High where approximately > 50% immune reactive tumour cells are detected besides an enhanced intensity of staining. Eccrine poroma significantly depicts p53, an expression which is equivalent to eccrine porocarcinoma. Enunciation of p16 retinoblastoma protein is absent in benign poroma. Immune staining for retinoblastoma is sparse in poroma and absent in porocarcinoma. Additional intrinsic or extrinsic tumour attributes can be incriminated. Elevation of angiotensin II with elucidation of angiotensin I type receptors which adhere to angiotensin II molecules is enunciated. Mobilization of angiotensin type I receptors by angiotensin II molecules triggers phosphokinase to prompt an intracellular calcium influx. Sequentially, manifestation of c Fos and c-Jun is encountered, which are major transcription factors influencing and activating mitogenesis within the neoplasm[10,11].

Differential Diagnosis: Conditions such as pyogenic granuloma, dermatofibroma, neurofibroma, seborheic keratosis bowenoid papulosis, leiomyoma, acrochordon, verrucae, adjunctive dermal adnexal tumours or a pregnancy induced vascular tumour are disorders which necessitate a histological demarcation from eccrine poroma. Eccrine poroma necessitates a distinction from basal cell carcinoma which can be achieved with dermoscopy. Intra-epidermal lesions or nodules of seborrheic keratosis abutting the epidermis also require distinction. Seborrheic keratosis is devoid of ductal differentiation and depicts horn cysts. Hidradenoma also requires a distinction and the contributing epithelial cells are enlarged, prominent with a pale or clear cytoplasm, in contrast to the compact, cuboidal epithelium of poroma[11,12].

Therapeutic Options: Benign adnexal lesions such as eccrine poroma are appropriately managed with surgical excision. Superficial lesions are alleviated with simple surgical excision or a

shave procedure or an electrosurgical eradication. Deep-seated lesions are responsive to simple surgical excision. A shave excision is feasible with pedunculated lesions. Superficial lesions can be managed with electro-surgical elimination in order to prevent disproportionate surgical ingress. Reoccurrence of an eccrine poroma is infrequent. Eccrine poroma is principally a benign lesion with a potential for malignant transformation, thus a preliminary detection, comprehensive surgical excision and close monitoring are crucial[11,12].

Conclusion

Poroma constitutes a benign adnexal neoplasm with cellular proliferation of terminal segment of sweat gland ducts. Dermatoscopy is cogent technique to discern pigmented lesions. White to pink halo is a predominant feature of an eccrine poroma on account of fibrinoid oedema. Poromas lacking pigmentation display a predominantly vascular configuration. Benign poroma elucidates the p53 protein and is devoid of p16 retinoblastoma protein. Elevated angiotensin II with elucidation of angiotensin I type receptors with adherence to angiotensin II molecules is enunciated. Pyogenic granuloma, dermatofibroma, neurofibroma, seborheic keratosis bowenoid papulosis, leiomyoma, acrochordon, verrucae, dermal adnexal tumours, pregnancy induced vascular tumour or basal cell carcinoma are conditions necessitating a histological demarcation from eccrine poroma. Eccrine poroma is alleviated with simple surgical excision, a shave procedure or an electrosurgical eradication. Reoccurrence of an eccrine poroma is infrequent.

Table 1: Differential Diagnosis of Eccrine Poroma[2,3].

Condition	Clinical Presentation	Histology	Immune- Histochemistry
Eccrine Poroma	Solitary, smooth or verrucous, flesh coloured or pigmented papule, plaque or nodule on acral surface	Cuboidal cells of eccrine origin wih monomorphous, ovoid nuclei, vascular stroma. Necrosis en masse or clear cell change	CK5+, CK14+, CEA+, EMA+
Basal Cell Carcinoma	Pearly papules with telangiectasia, rolled edges, central ulceration situated on sun-exposed skin.	Basaloid cells with large, hyperchromatic, oval, palisading nuclei and scanty cytoplasm, no intercellular bridges	EMA+, CK19+, BerEp4+, CD10+
Seborrheic Keratosis	Flat, greasy, pigmented squamous epithelial proliferation with keratin filled cysts, situated on head, neck, extremities	Raised proliferation of basaloid cells with expansile growth and rete ridges , keratinous cysts, acanthotic or hyperkeratotic pattern	CK+, EMA+, CK19-, BerEp4-
Hidradenoma	Solitary flesh coloured, red, blue, solid or cystic nodules located in trunk, head and extremities.	Circumscribed, unencapsulated dermal tumour. Cystic and mucinous areas within tumour cells. Eccrine differentiation, eosinophilic and clear cell components	EMA+, CK+
Pyogenic granuloma	Solitary, erythematous, dome shaped nodule, bleeds on touch, situated on hands, feet, oral mucosa, head and neck	Capillary proliferation embedded in an oedematous stroma, dense neutrophilic infiltration with granulation tissue, erosion of superficial epidermis.	CD34+, CD31-
Cylindroma	Solitary, slow growing firm, pink nodules.	Interlacing pattern of tumour cells in dermis with enveloping matrix of basement membrane. Dark basaloid ad clear cells	CK19+,EMA+, CEA+, CD34+
Acrochordon	Flesh coloured, hanging or protruding papules in the intertriginous area	Polypoid projection with a smooth surface, flattened rete ridges, fibrillated collagen in central core. Variant has a verrucous surface with papillated epidermal hyperplasia and acanthosis	HPV6+, HPV 11+
Verruca Vulgaris	Hyperkeratotic, flesh coloured papules with rough, irregular surface on the hands and knees.	Digitated epidermal hyperplasia, hyperkeratosis, koilocytes in granular layer, dilated capillaries in the papillae with parakeratotic and red cells over digitations	HPV2+, HPV4+
Keratoacanthoma	Firm nodule with central ulcer and keratin extrusion on sun-exposed areas	Pushing epidermal growth , abundant extruded keratin within the central crater with pseudo-epitheliomatous hyperplasia	CD10+, CK+, EMA+

CK; cytokeratin, EMA; epithelial membrane antigen, CEA; carcino-embryonic antigen, HPV; human papilloma virus

Table 2: Variants of Poroma[4]

Variant	Depth of Tumour Cells
Hidroacanthoma simplex	Intra-epidermal
Eccrine Poroma	Epidermal and superficial dermis
Dermal Ductal Tumour	Dermal neoplastic cells arranged in solid pattern
Poroid Hidroadenoma	Dermal neoplastic cells arranged in solid-cystic pattern

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