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Original Article

A clinicoepidemiological study of different types of nevi in patients attending at a tertiary care hospital in Eastern India

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Abstract

Objective To determine the demographic, epidemiological and clinical features and associations of different types of nevi from eastern India.

Methods This descriptive study was carried out R. G. Kar Medical College and Hospital, Kolkata over 12 months (from March 2013 to February 2014). Two hundred patients of all age groups and both sexes presenting with or found to have nevi were evaluated for demographical, clinical variables and comorbidities.

Results The most common type of nevus in our study was Becker's nevi and the least common was eccrine angiomatous nevus. Most common age of presentation was the first and second decades. An overall female preponderance was noted in our study. Infantile hemangioma was seen more commonly in girl children. Nevus of Ota was commoner in females. In contrast to previous findings, majority of VEN lesions were on head and neck region, followed by trunk. Most of the lesions of ILVEN affected lower half of the body.

Conclusion A diverse variety of nevi were seen, more commonly in females. They usually appear in the first and second decade of life. Patients should be meticulously examined for cutaneous and systemic associations.

Key words
Nevi, Becker's nevus, infantile hemangioma, nevus of Ota.

Introduction

We come across with a wide variety of nevi in dermatology practice. Nevi may be cosmetically annoying or be simply incidental findings.

'Nevus' (Latin for 'maternal impression' or 'birthmark') is synonymous with cutaneous hamartoma - a term used to denote non-neoplastic proliferation of a tissue's usual components.[1]

In general, nevi are classified according to the component cell, tissue or organ, and subdivided according to the macroscopic or histological nature of the abnormality such as epidermal nevi, dermal and subcutaneous nevi, vascular nevi, melanocytic nevi.[1]

The epidemiology of nevi and its associations, especially in this part of eastern India has not been substantially described. Our study aimed to determine the demographic, epidemiological and

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clinical features and comorbidities in patients presenting with different types of nevi from eastern India.

Methods

This descriptive study was carried out at the Department of Dermatology, Venereology, and Leprosy of a tertiary level centre in Kolkata over 12 months (from March 2013 to February 2014). Patients of all age group and both sexes presenting with or found to have a nevus/ multiple nevi were included in the study population. Written informed consent from the patient was obtained before inclusion. Institutional ethics clearance was obtained before start of the study.

Two hundred consecutive patients with nevus/ nevi were evaluated for demographical variables (including age, sex, religion, occupation, family history and others), comorbidities (including related illnesses, present and past, any other associated systemic illness) and examined (clinical pattern of the disease, its severity and associated cutaneous and systemic findings).

Laboratory investigation included histopathology (if required for diagnosis confirmation) with H & E, and special stain. Radiological investigations were done whenever necessary.

The data were collected manually and compiled in a pre-structured data sheet. We used descriptive statistics with Microsoft Excel (2007).

Results

We studied 200 patients with nevi. The incidence of the same referring to tissue of origin, male and female distribution and ratio is as shown in **Table 1**.

Epidemiologic features

Age distribution: The age of our study population ranged from 7 days to 63 years, with a mean of 14.83±11.8 years and median age of 14 years. Decade-wise analysis of age of the patients showed that 75 (37.5%) cases belonged to first and second decade, each. 36 (18%) cases were in third decade and the rest 14 (7%) were older than 30 years of age at presentation.

Religion: Most of the patients we examined were Hindus (75%). The other patients were Muslims (25%).

Residence We observed that 118 (59%) patients came from urban areas, while the rest (82, 41%) came from rural areas adjacent to Kolkata.

Age of appearance The minimum age of appearance of the nevi was at birth and maximum at 15 years of age. The data are summarized in **Table 2**.

Family history None of the family members of individual patients with different types of nevi were affected by the same variety of nevi. History of consanguinity was present in 10 (5%) cases.

Clinical features (Figure 1-5)

Side and site affected (left/ right/both) The side of involvement of individual types of nevi is represented in **Table 3**.

Distribution of lesions In most of the patients (187, 93.5%) the lesions were localized and unilateral. However, 1 case of verrucous epidermal nevus (VEN) had generalized unilateral distribution (nevus unius lateris). Two cases of Becker's nevi had also generalized unilateral involvement. In 1 patient of Becker's nevus, there was bilateral involvement.

Table 1 Sex wise distribution of individual types of nevi.

Diagnosis	*Male*	*Female*	*Total*	*Male:female ratio*
Epidermal nevi 93 (46.5%) cases				
VEN	12	10	22	1.2:1
ILVEN	6	5	11	1.2:1
Nevus sebaceous	11	14	25	0.78:1
Becker's nevi	20	9	29	2.2:1
Nevus comedonicus	0	3	3	-
PEODDN	0	2	2	-
Eccrine angiomatous nevi	0	1	1	-
Dermal and subcutaneous nevi				
Nevus lipomatosus superficialis	2	1	3	2:1
Vascular nevi 20 (10%) cases				
Nevus flammeus	3	7	10	0.42:1
Hemangiomas	2	8	10	0.25:1
Melanocytic nevi 58 (29%) cases				
Congenital melanocytic nevi	3	8	11	0.37:1
Acquired melanocytic nevi	4	7	11	0.57:1
Nevus spilus	1	6	7	1:6
Halo nevi	1	6	7	1:6
Mongolian spot	6	2	8	3:1
Nevus of Ota	5	9	14	0.55:1
Hypomelanotic nevoid conditions 26 (13%) cases				
Hypomelanosis of Ito	2	3	5	0.66:1
Nevus depigmentosus	12	9		1.33:1
Total	90	110		1.22:1

PEODDN: Porokeratotic eccrine ostial and dermal duct naevus

Table 2 Age of appearance of individual types of nevi (n=200).

Types of nevi	*At birth*	*1day-1month*	*>1month-1yr*	*>1yr-10yrs*	*>10yrs*
VEN	17	1	4	-	-
ILVEN	10	-	-	1	-
Nevus sebaceous	25	-	-	-	-
Becker's nevi	-	-	1	13	15
Nevus comedonicus	2	-	-	1	-
PEODDN	1	-	1	-	-
Eccrine angiomatous nevi	-	-	-	1	-
Nevus lipomatosus superficialis	3	-	-	-	-
Nevus flammeus	10	-	-	-	-
Hemangiomas	2	8	-	-	-
Congenital melanocytic nevi	9	-	1	1	-
Acquired melanocytic nevi	-	-	-	8	3
Nevus spilus	3	-	1	3	-
Halo nevi	-	-	-	2	5
Mongolian spot	8	-	-	-	-
Nevus of Ota	-	-	-	9	5
Hypomelanosis of Ito	4	-	1	-	-
Nevus depigmentosus	20	-	1	-	-

PEODDN: Porokeratotic eccrine ostial and dermal duct naevus, ILVEN: Inflammatory linear verrucous epidermal nevus, VEN: Verrucous epidermal nevus.

Table 3 Side and sites* of involvement of individual types of nevi

Variety of nevus	*Right*	*Left*	*Bilateral*	*Head & neck*	*Trunk*	*Upper limb*	*Lower limb*
Verrucous epidermal nevus (VEN)	8	14	0	13	7	4	2
Inflammatory linear verrucous epidermal nevus (ILVEN)	5	5	1	1	2	2	7
Nevus sebaceous	16	11	0	25	0	0	0

Variety of nevus	*Right*	*Left*	*Bilateral*	*Head & neck*	*Trunk*	*Upper limb*	*Lower limb*
Becker's nevi	16	10	0	5	8	19	2
Nevus comedonicus	0	3	0	3	0	0	0
PEODDN	0	2	0	0	0	2	0
Eccrine angiomatous nevi	0	1	0	1	0	0	0
Nevus lipomatosus superficialis	1	0	2	0	2	0	3
Nevus flammeus	5	5	0	9	3	2	1
Hemangiomas	5	5	0	6	3	1	1
Congenital melanocytic nevi	3	5	3	7	3	0	1
Acquired melanocytic nevi	4	6	1	11	0	0	0
Nevus spilus	4	3	0	5	2	0	0
Halo nevi	4	3	0	5	2	0	0
Mongolian spot	2	0	6	0	8	0	0
Nevus of Ota	8	4	2	14	0	0	0
Hypomelanosis of Ito	1	1	3	0	5	5	4
Nevus depigmentosus	13	8	0	9	6	5	2

* Side and sites described either singly or simultaneously with another site. PEODDN: Porokeratotic eccrine ostial and dermal duct naevus, ILVEN: Inflammatory linear verrucous epidermal nevus, VEN: Verrucous epidermal nevus.

Table 4 Secondary changes in nevi

Types of nevi (number of patients)	*Secondary changes*	*N (%)*
Nevus sebaceous (25)	Secondary infection	1 (0.5)
	Nodular overgrowth	1 (0.5)
	Grouped umbilicated papules	1 (0.5)
	Fleshy nodular mass	1 (0.5)
Nevus comedonicus (3)	Secondary infection	1 (0.5)
	Inflamed acne	2 (1.0)
Becker's nevi (29)	Slight hairy changes	3 (1.5)
	Hypertrichosis	13 (6.5)
	Hypertrichosis and acne	8 (4.0)
Congenital melanocytic nevus (11)	Dense hairy changes	3 (3.5)
Acquired melanocytic nevus (11)	Few coarse hairs	7 (3.5)

Table 5 Associations with other cutaneous/ systemic findings

Types of nevi	*Associations*	*Number of patients*
VEN	Becker's nevus	1
ILVEN	Congenital melanocytic nevus	1
Nevus sebaceous	Becker's nevus	1
	Unilateral nevoid telangiectasia	1
	Basal cell carcinoma	1
	Syringocystadenoma papilliferum	1
	Squamous cell carcinoma	1
	Multiple café-au-lait spots	1
Becker's nevi	Nevus depigmentosus	3
	Alopecia universalis	1
	Congenital melanocytic nevus	1
	Nevus spilus	1
	Skeletal abnormality	1
Nevus flammeus	Sturge-Weber syndrome	1
	Klippel-Trenaunay Syndrome	1
	Phakomatosis pigmentovascularis	1
Congenital melanocytic nevus	Many satellite nevi	1
	Nevus spilus	1
Nevus of Ota	Nevus spilus	1
	Melasma	1
Hypomelanosis of Ito	Vitiligo	1

ILVEN: Inflammatory linear verrucous epidermal nevus, VEN: Verrucous epidermal nevus

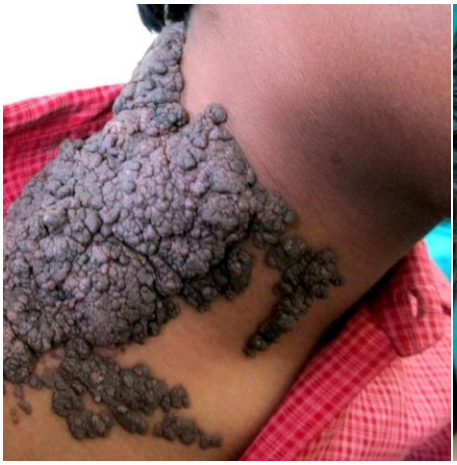

Figure 1 Lesions of verrucous epidermal nevus involving right side of neck in a 12-year-old boy.

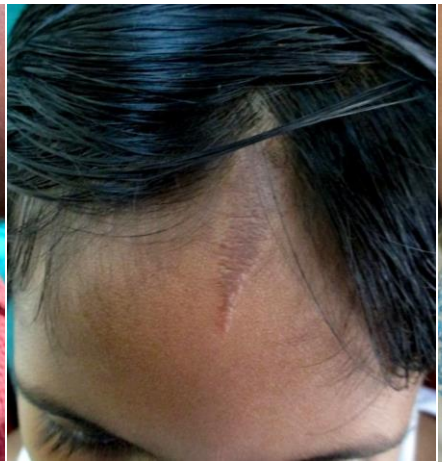

Figure 2 Lesion of nevus sebaceous involving the forehead with a strict unilateral distribution.

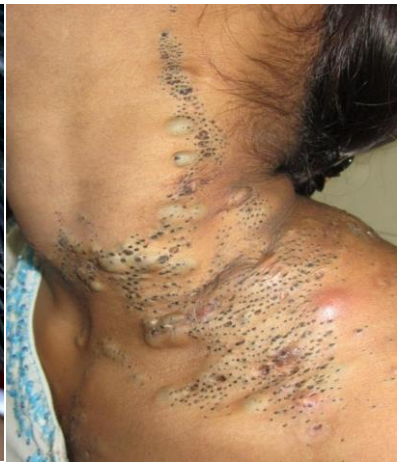

Figure 3 Lesions of nevus comedonicus involving left side of neck in a 17-year-old girl

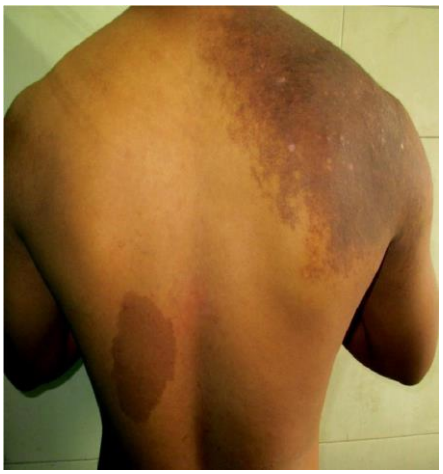

Figure 4 Co-occurrence of Becker's nevi and nevus spilus

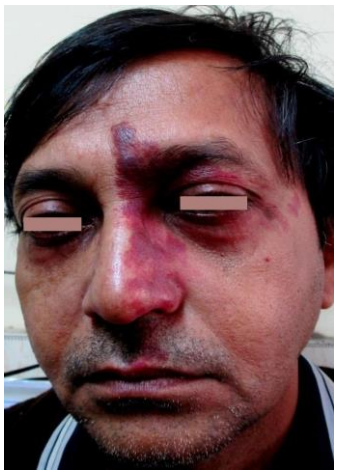

Figure 5 Nevus flammeus in a patient with Sturge-Weber syndrome.

Two cases of nevus flammeus had generalized unilateral distribution. Two cases of nevus of Ota had bilateral involvement (nevus of Hori). Out of the 5 cases of hypomelanosis of Ito all were generalized, 2 had unilateral involvement and the rest 3 had bilateral distribution.

Secondary changes The secondary changes on the nevi are represented in **Table 4**. Hypertrichosis was the most frequent change seen in melanocytic nevi and Becker's nevus.

Associated cutaneous and systemic involvement

In our study group of 200 patients, total 26 patients with different types of nevi had other associated cutaneous and systemic involvement. They are summarized in **Table 5**.

Discussion

Commensurate with usual demographic profile of the patients attending our study site, majority of the patients (59%) came from urban locality of Kolkata and its suburbs. An overall female

preponderance (female to male ratio of 1.22:1) was noted in our study. However, we noted different gender distributions of different types of nevi **(Table 1)**. The most common type of nevus in our study was Becker's nevi and the least common was eccrine angiomatous nevus.

In a study of 100 patients with Becker's nevi it was found to be five times more frequent in males than females.[2] In our study also, we found male predominance over female patients with a male to female ratio of 2.22:1. Infantile hemangiomas are seen more commonly in girls than boys with preponderance between 3 and 5:1.[3,4] In the present study, we also found female preponderance with a female to male ratio 4:1. Nevus of Ota was commoner in females (female to male ratio 2.5:1). However, in literature this ratio varied from 4:1 to 12:1.[5,6] Mongolian spots were more common in boys (M:F=3:1). This male predominance has been described in literature.[7]

The age of appearance of different types of nevi in our study group corroborated earlier observations with only few minor variations.

None of the family members of patients with nevi were affected by the same variety of nevi; history of consanguinity was present in total 10 (5%) cases. These two findings relate to the possibility of nevi causation by genetic mosaicism resulting from somatic mutation.[8-10]

Regarding sites of distribution, in a review of 233 cases Rogers[11] found that VEN could be located at any site, though mainly on trunk and limbs and less commonly on the head and neck. The distribution of ILVEN was predominantly on the lower half of the body, while majority of the nevus sebaceous lesions were on the scalp. However, in our study majority of VEN lesions were on head and neck region (**Figure 1**), followed by trunk, upper limb and lower limb. Most of the lesions of ILVEN affected lower half of the body. All the cases of nevus sebaceous (**Figure 2**) were seen in head neck region. In 23 cases lesions were on the scalp and in rest 2 cases in the face.

The usual site for Becker's nevi is shoulder, anterior chest or scapular region, but lesions on face, neck and distal limbs have been reported.[2] In our study, the upper extremity including forearm, arm and shoulder were the commonest sites. Chest wall region was also frequently affected. Two cases were seen in lower limbs.

Though the scalp is rarely affected[12] in nevus comedonicus (**Figure 3**), in one out of the 3 cases we found the same.

Interestingly the only one case of eccrine angiomatous nevus we found was on the face - a rather uncommon site.

In most of the patients (93.5%) the distribution of nevi was localized and unilateral **(Table 3).** However, one case of VEN had generalized unilateral distribution (nevus unius lateris). Similar generalized unilateral distribution with oral mucosal involvement has been described.[13] Two cases of Becker's nevi had also generalized unilateral involvement. In one patient of Becker's nevus there was bilateral involvement.

Two cases of nevus of Ota (14.2%) had bilateral involvement (Nevus of Hori). Bilateral involvement has been described in 10% cases of Nevus of Ota.[6]

Regarding cutaneous and systemic associations, in our study group of 200 patients, total 26 patients with different types of nevi had other associated cutaneous and systemic involvement. Four patients with nevus sebaceous had associated findings like unilateral nevoid telangiectasia, basal cell carcinoma,

syringocystadenoma papilliferum and squamous cell carcinoma.

One patient each of Becker's nevus had associated VEN and nevus sebaceous. In five patients of Becker's nevi, three had nevus depigmentosus, one had nevus spilus and one had congenital melanocytic nevus.

Three patients with Becker's nevi had associated nevus depigmentosus - only one such co-occurrence has been reported previously.[14] In addition, one each had congenital melanocytic nevus and nevus spilus, which are also unreported incidents (**Figure 4**). Also, one patient each of VEN and nevus sebaceous had associated Becker's nevus, both of which are unreported associations to the best of our knowledge.

One patient each with nevus spilus had nevus of Ota and a melanocytic nevus in association- only one such association each has been reported in the literature.[15,16]

Brown and Gorlin demonstrated oral mucosal involvement in a case of nevus unius lateris.[13] Lesions of nevus sebaceous can extend on to the oral mucosa.[17] Port-wine stain can involve the oral mucosa either alone or with other associated syndromes.[18] In case of nevus of Ota, ipsilateral eye shows a diffuse bluish discoloration of the sclera and a patchy brownish color of the conjunctiva. The nasal and oral mucosae are also known to be similarly affected.[6] In our study, group few patients with nevus flammeus and nevus of Ota showed mucosal involvement.

Oral mucosal involvement was seen (**Figure 5**) in one patient of nevus flammeus associated with Sturge-Weber syndrome. Out of 14 patients of nevus of Ota, 12 patients had conjunctival pigmentation and in one patient there was oral mucosal pigmentation. Genital mucosal involvement was not noted in any patient of our study population.

Conclusion

The most common type of nevus in our study was Becker's nevi and the least common was eccrine angiomatous nevus.

Most common age of presentation was the first and second decades. An overall female preponderance was noted in our study. Infantile hemangioma was seen more commonly in girl children. Nevus of Ota was commoner in females.

In contrast to previous findings, majority of VEN lesions were on head and neck region, followed by trunk. Most of the lesions of ILVEN affected lower half of the body.

Three patients with Becker's nevi had associated nevus depigmentosus, only one such co-occurrence has been reported previously In addition, one each had congenital melanocytic nevus and nevus spilus, which are unreported incidents. Also, one patient each of VEN and nevus sebaceous had associated Becker's nevus-both of which are unreported associations to the best of our knowledge.

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