

Natural Evolution of Spitz Nevi

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Key Words

Spitz nevus · Melanocytic nevus · Clinical diagnosis ·
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Abstract

Background: The natural evolution of melanocytic nevi is a complex, multifactorial process that can be studied by monitoring nevi on a long-term basis. **Methods:** To assess the evolution pathway of Spitz nevi, lesions with clinical and dermoscopic features suggestive of Spitz nevi were monitored and baseline and follow-up images compared. **Results:** Sixty-four patients (mean age 10.4 years) with lesions suggestive of Spitz nevi were included. Lesions were monitored for a mean follow-up period of 25 months. Upon side-by-side evaluation of baseline and follow-up images, 51 (79.7%) lesions showed an involution pattern and 13 (20.3%) lesions showed a growing or stable pattern. No significant differences were found between growing and involving lesions in terms of patient age and sex and the location and palpability of lesions. The great majority of growing lesions were pigmented or partially pigmented (92.3%), whereas 47.1% of lesions in involution were amelanotic ($p = 0.005$). **Conclusion:** In this series of lesions clinically and dermoscopically diagnosed as Spitz nevi, spontaneous involution seems to be the most common biologic behavior.

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Introduction

The natural evolution of melanocytic nevi is a complex, multifactorial process involving constitutional and environmental factors. Among the various types of melanocytic nevi, Spitz nevi are the most controversial due to their morphologic vicinity to melanoma [1, 2]. Spitz nevi usually presents as solitary, pink-to-red plaques or nodules, but pigmented Spitz nevi are also commonly seen. Dermoscopy has contributed significantly to improving the clinical diagnosis of pigmented and nonpigmented Spitz nevi and, more recently, digital dermoscopic follow-up has allowed a better understanding of the evolution of this peculiar group of nevi [3–7].

Preliminary data suggest that Spitz nevi in different stages of evolution are characterized by different dermoscopic patterns [3, 8–12]. In the growing phase, Spitz nevi reveal regular streaks (finger-like or globule-like pigmented projections on the periphery) representing the hallmark of the typical starburst pattern seen in dermoscopy. After a variable number of months, the peripheral projections disappear and, consequently, the lesion becomes stable. During this phase a homogeneous pattern is visible in dermoscopy, typified by structureless brown-to-black pigmentation. Finally, after a variable number of years, the lesion starts to lose pigment, undergoing spontaneous involution.

Table 1. Characteristics related to patients and lesions in Spitz nevi showing the growing/stable pattern or the involution pattern

Characteristics	Growing or stable pattern		Involution pattern (partial or complete)	
	(n = 13)	%	(n = 51)	%
Age				
<10 years	7	53.8	31	60.8
10–20 years	4	30.8	16	31.4
>20 years	2	15.4	3	5.9
n.a.	0	–	1	2.0
Sex				
Female	7	53.8	17	33.3
Male	6	46.2	34	66.7
Location				
Face	2	15.4	15	29.4
Trunk	3	23.1	2	3.9
Upper extremity	2	15.4	10	19.6
Lower extremity	6	46.2	20	39.2
n.a.	0	–	4	7.8
Palpability				
Flat	5	38.5	11	21.6
Palpable	6	46.2	29	56.9
Nodular	2	15.4	11	21.6
Pigmentation				
Amelanotic	1	7.7	24	47.1
Hypomelanotic	2	15.4	12	23.5
Pigmented	10	76.9	15	29.4
Follow-up				
6–24 months	11	84.6	30	58.8
25–72 months	2	15.4	21	41.2

Prevalence data seems to confirm these evolutionary steps as Spitz nevi usually appear in children and young adults, they peak during the second and third decades of life, and are only rarely seen from the seventh decade to the ninth decade [13, 14]. However, definite conclusions on the evolution pathway of Spitz nevi cannot be drawn due to the limited number of published cases.

The aim of this study was to investigate the natural evolution of Spitz nevi by retrospectively reviewing the clinical and dermoscopic features of Spitz nevi that underwent long-term follow-up.

Methods

Clinical and dermoscopic images were selected from the databases of the outpatient clinics of 5 academic referral centers in Italy. Inclusion criteria were the presence of clear-cut clinical and dermoscopic morphologic features suggesting the diagnosis of Spitz nevus and a follow-up image taken 6 months or more after

the baseline image. Lesions with equivocal features and lesions excised without the established minimum follow-up period were excluded from the study.

Images were obtained using a digital imaging system (Video-cap; DS Medica, Milan, Italy; Molemax II; Derma Medical Systems, Vienna, Austria; or Dermlite Foto; 3Gen LLC, Dana Point, Calif., USA). For all selected lesions, age, sex, location, and follow-up duration were collected.

Clinical and dermoscopic images were evaluated by one of us (G.A.). Based on clinical palpability, each lesion was scored as flat, palpable, or nodular. Baseline dermoscopic images were reviewed for the presence of melanin pigment and scored as amelanotic (no pigment present), hypomelanotic (pigment present in less than 20% of the lesion surface), or pigmented (pigment present in more than 20% of the lesion surface). Finally, follow-up dermoscopic images were reviewed in comparison with the baseline image and 1 of the following 2 patterns was scored for each lesion: (i) a growing or stable pattern if the lesion showed enlargement or the same size and the same dermoscopic features as in the baseline image or (ii) an involution pattern if the monitored lesion was smaller, less pigmented, less visible, or not visible at all.

Presence of the growing/stable pattern or the involution pattern was then assessed in association with the following variables: age, sex, location, palpability, pigmentation, and follow-up duration. Significant differences between the 2 groups of lesions were evaluated using a χ^2 test.

Results

We monitored and reviewed clinical and dermoscopic images of 64 Spitz nevi in 40 (62.5%) males and 24 (37.5%) females with a mean age of 10.4 years (range 3–27). Only 5 (7.8%) patients were older than 20 years. All patients were Caucasian. Lesions were located mostly on the lower extremities (26 lesions; 40.6%), followed by the face (17; 26.6%) and upper extremities (12; 18.8%). Most lesions were clinically palpable or nodular (48; 75%) and pigmented or partially pigmented (39; 60.9%).

Lesions were monitored for a mean follow-up period of 25 months (range 6–72 months). Forty-one (64.1%) lesions were monitored for 6–24 months and 23 (35.9%) lesions were monitored for 25–72 months. Excision and subsequent histopathologic examination was performed as per patient request in 6 cases (9.4%), and in all cases the diagnosis was Spitz nevus.

Upon side-by-side evaluation of baseline and follow-up images, 51 (79.7%) lesions showed an involution pattern and 13 (20.3%) lesions showed a growing or stable pattern (table 1). Of these 13 lesions, 9 showed a stable pattern and 4 exhibited a growing pattern. One of the growing lesions was excised, with histopathologic examination revealing a pigmented Spitz nevus.

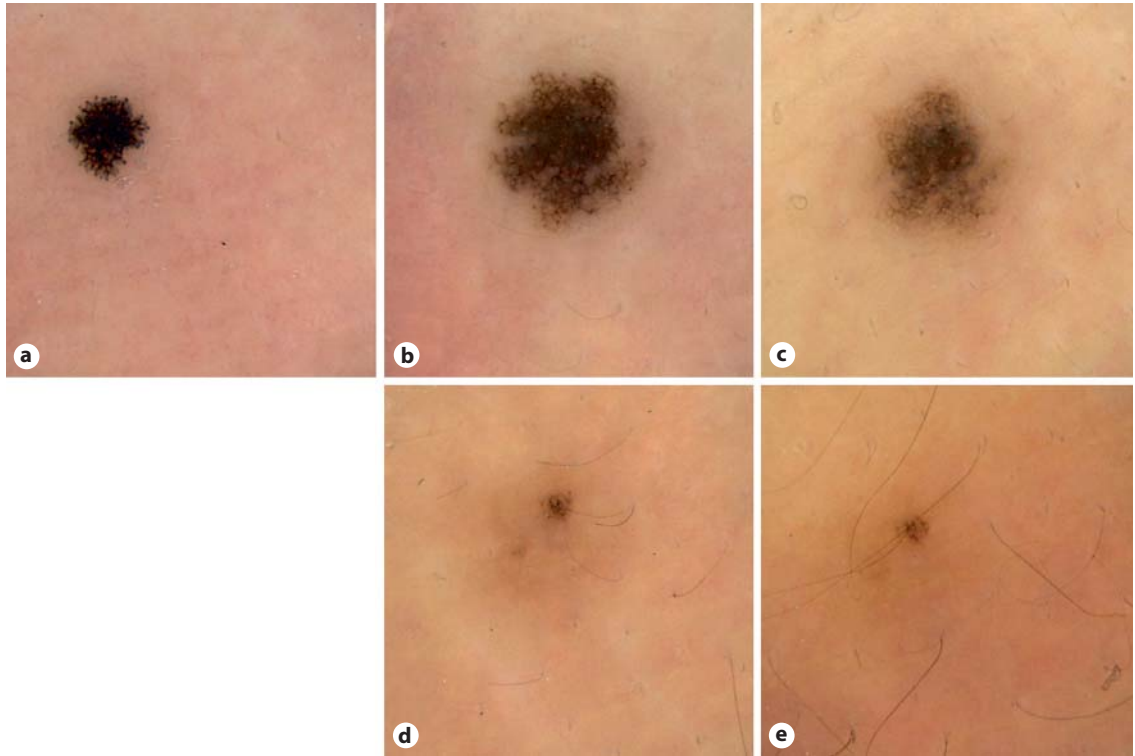


Fig. 1. Dermoscopic views of a pigmented Spitz nevus located on the leg of an 8-year-old boy. **a** At the baseline consultation a stereotypical starburst pattern is visible. **b** After 1 year remarkable growth of the lesion can be noted. **c** Two years after the baseline image the lesion has started the involution process. **d** The spontaneous involution is almost complete 1 year later. **e** Five years after the baseline image only a small blotch of residual pigmentation is still visible.

No significant differences were found between growing and involuting lesions in terms of patient age and sex or the location and palpability of lesions. However, the great majority of growing lesions were pigmented or partially pigmented (92.3%), whereas 47.1% of lesions in involution were amelanotic ($p = 0.005$).

The difference between lesions followed up for less or more than 2 years was not significant. However, of the Spitz nevi monitored for more than 2 years, only 2 (8.7%) showed a growing/stable pattern compared to 21 (91.3%) lesions exhibiting an involution pattern.

Discussion

The most striking result of our study was that, independently of age, sex, location, palpability, and pigmentation of the lesion, most Spitz nevi tended to go through spontaneous involution over time. In our series, about 80% of Spitz nevi exhibited an involution pattern over a

mean follow-up period of 25 months. Clearly, involution is a function of time as the great majority of growing/stable lesions were monitored for less than 25 months. Spontaneous involution seems, therefore, a plausible explanation for the epidemiologic data reporting the frequency of Spitz nevi as being inversely correlated to patient age [13, 14].

The 2 main variants of Spitz nevi are the amelanotic and the pigmented ones [9]. Classic Spitz nevi are usually nonpigmented plaques or nodules commonly found on the face and limbs of children and young adults. However, the spreading use of dermoscopy has allowed the recognition of an increasing number of pigmented Spitz nevi because of the unique morphologic features revealed by the dermatoscope. In a previous case report, we described the involution pathway of a pigmented Spitz nevus that spontaneously disappeared over a follow-up period of 3 years [3]. In the present study, we demonstrated that not only pigmented but also nonpigmented Spitz nevi might go through spontaneous involution over time.

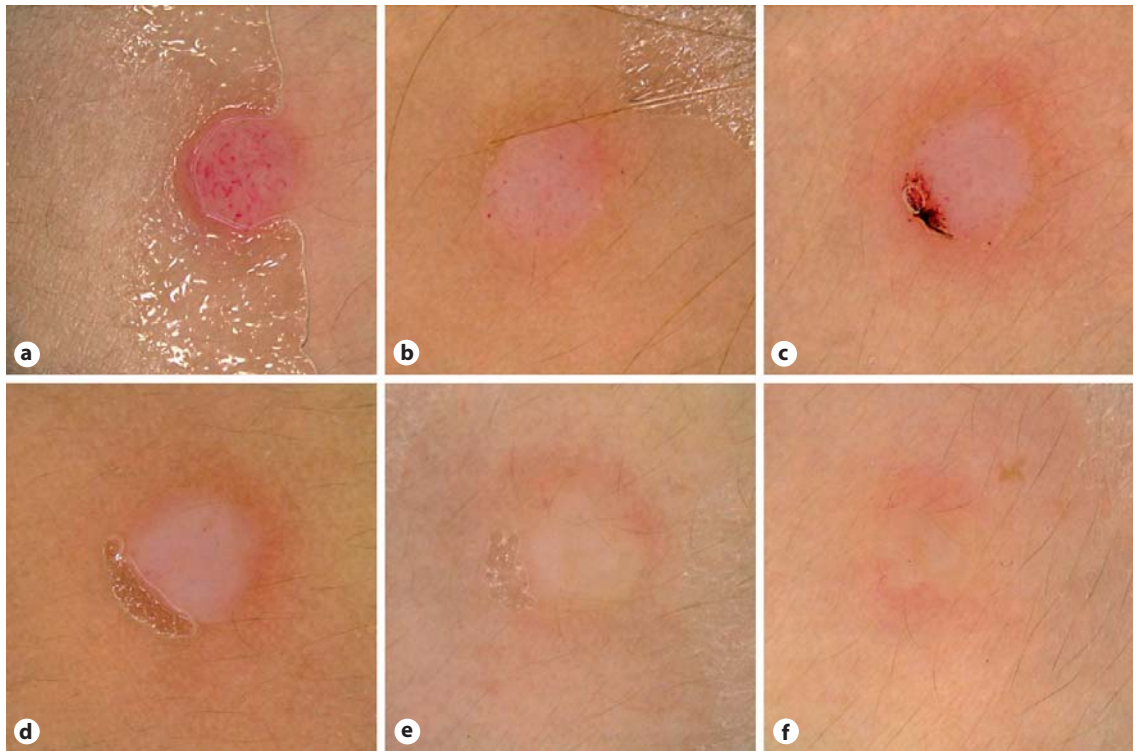


Fig. 2. Dermoscopic views of a nonpigmented Spitz nevus located on the face of a 10-year-old boy. **a** At the baseline consultation mainly dotted vessels are seen in the context of a newly appeared nodule. **b** After 1 year the lesion is slightly larger but the vessels are less visible. **c** Two years after the baseline image the lesion does not show further increase in size. **d** One year later the lesion shows a large, white, scar-like area with complete loss of vascular structures. **e** Four years after the baseline image the involution is almost complete. **f** After 5 years the nodule has disappeared and only a small scar-like area is still visible.

Pizzichetta et al. [11] found that most commonly the initial dermoscopic face of pigmented Spitz nevi is represented by a globular lesion which tends to acquire the classic starburst appearance after a variable number of months. The starburst pattern is typified by streaks, pseudopods, or finger-like projections regularly distributed on the periphery of an otherwise symmetric and hyperpigmented macule or plaque. The presence of streaks is not pathognomonic in Spitz nevi because they can also be found in melanoma, representing the behavior of a benign or malignant lesion by growing horizontally. In benign lesions like Spitz nevi, streaks tend to disappear over time as soon as the lesions stop growing. In this stable phase Spitz nevi are thus seen in dermoscopy as homogeneous, heavily pigmented lesions which can be more difficult to recognize. Over a variable period of several months to a few years, a progressive decrease in pigment occurs until possible complete involution of the lesion is observed (fig. 1).

Dermoscopic recognition of amelanotic Spitz nevi is much more difficult. Dotted vessels, tan globules, and reticular depigmentation are common findings but the diagnosis should always be based on a combination of clinical and dermoscopic features. After a growing phase of several months, the lesion starts to become smaller until it finally disappears (fig. 2).

There are at least 2 limitations of this study that should be mentioned. First, we could only demonstrate the biologic behavior of Spitz nevi in children due to the fact that spitzoid lesions in adults are usually excised to rule out melanoma [15]. Second, to perform a follow-up study we could not verify the clinical diagnosis via histopathologic examination. We tried to limit this bias by including only those lesions with clear-cut clinical and dermoscopic features suggestive of Spitz nevi [16]. However, it is still possible that some of the included lesions were instead different entities, especially in the context of the nonpigmented lesions. Despite these limitations, in a series of

lesions clinically and dermoscopically diagnosed as Spitz nevi, we demonstrated that spontaneous involution seems to be the most common biologic behavior of both pigmented and nonpigmented variants.

Disclosure Statement

The authors have no conflict of interest to declare.

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