

# Childhood Longitudinal Melanonychia: Case Reports and Review of the Literature

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## Abstract

“Longitudinal melanonychia” refers to a brown or brown-black longitudinal band on a fingernail or toenail. A number of conditions can cause longitudinal melanonychia, but its main importance is that, in some patients, it may indicate the presence of a subungual malignant melanoma. Hyperpigmented nail bands are not uncommon in African-American, Latino and Asian patients, especially those over sixty years of age, and are often multiple in these groups. Longitudinal melanonychia is most worrisome when there is a solitary, dark, broad longitudinal band with pigment extending over the proximal nail fold (Hutchinson’s sign). Such findings are considered to be a strong indication for biopsy of the nail matrix to rule out melanoma. Since nail matrix biopsy sometimes results in permanent nail deformity, and since the incidence of malignant melanoma is quite small in the pediatric age group, there is some controversy as to whether this procedure should routinely be performed in children. We report two cases of dramatic longitudinal melanonychia in toddlers and review the current literature on the management of this striking condition in the pediatric age group.

**Key Words:** Melanoma, children, melanonychia.

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## Introduction

A BROWN OR BROWN-BLACK longitudinal band on a fingernail or toenail is called longitudinal melanonychia (LM) or melanonychia striata. This condition is most commonly found in African-American, Latino, and Asian patients, especially those over sixty years of age. LM occurs more frequently on fingers than on toes, with the thumb affected in approximately one-half of all cases. Hyperpigmented longitudinal nail bands may be caused by an increase in the number and/or activity of suprabasilar melanocytes present in the distal nail matrix. They can also result from certain medications or such conditions as benign nevi or fungal infection. Whatever the cause, the results can be virtually indistinguishable upon initial presentation (1, 2). The main reason that LM is of clinical concern, however, is that it is sometimes associated with subungual malignant melanoma.

The presence of a solitary, dark, broad longitudinal band with pigment extending over the

proximal nail fold (Hutchinson’s sign) requires that melanoma be ruled out. Malignant melanoma is not common in children and accounts for fewer than 2% of all melanoma cases in population-based studies; however, children with malignant melanoma have a significant risk of death from the disease if diagnosis is delayed (3). Moreover, subungual malignant melanoma itself frequently has a poor prognosis due to delayed diagnosis. We reviewed the medical literature and found 83 cases of LM reported in children. We report two additional cases of LM, in both of which biopsies were done shortly after presentation. The approach to management of patients with this striking physical finding is discussed.

## Case Reports

**Case 1:** A 2-year-old boy was seen with a pigmented area of the nail of the left index finger, which had been noticed by his parents when the boy was approximately 10 months of age. On examination there was a 2-mm-wide, centrally located linear band of pigmentation along the entire length of the nail (Fig. 1). Nail matrix biopsy revealed a lentiginous hyperplasia of melanocytes. No evidence of malignant melanoma was seen.

**Case 2:** A pigmented area of the nail of the right middle finger of a 2-year-old girl had been

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**Fig 1.** Two-year-old boy with a 2-mm-wide linear pigmentation of the left index finger.

noticed by her parents shortly after her birth. On examination there was a 3-mm-wide linear dark streak slightly radial to the midline along the entire length of the nail (Fig. 2). Biopsy of the nail bed revealed pigment-laden macrophages.

**Operative Technique:** In both cases, with general anesthesia and proximal tourniquet control for hemostasis, the nail plate was removed from the nail bed by gentle dissection with fine iris scissors. The nail fold was retracted to expose the pigmented lesion, which originated from the germinal matrix. An elliptical excision was performed. The defect was repaired under loupe magnification using interrupted fine cat-gut sutures. Antibiotic ointment was applied and the wound dressed with nonadherent gauze. In both cases, the areas healed uneventfully. One year later, no residual nail deformity was present.



**Fig 2.** Two-year-old girl with a 3-mm-wide linear pigmentation of the right middle finger.

## Discussion

The management of longitudinal melanonychia in children presents a formidable challenge to the diagnostician. The remote chance of discovering malignant melanoma must be weighed against the risks of general anesthesia and the potential cosmetic damage that might result from nail matrix biopsy. Diagnostic excisional nail biopsy involves significant manipulation of the nail bed and periungual area, and even in the most qualified surgical hands can result in permanent nail dystrophy. Although melanoma is overwhelmingly more common in adults, its incidence in prepubescent children is well documented (0.8 per million under age 10), prompting many dermatologists to “play it safe” and perform nail matrix biopsies, sometimes with significant cosmetic sequelae. A review of the literature on LM in children (Table) (2, 4–18) suggests that a more conservative approach to the management of this condition may be indicated.

The largest series of pediatric patients with LM was reported by Goettmann-Bonvallot et al. in 1999 (4). They reported on 40 patients younger than 16 years of age, seen in their nail clinic in Belgium with LM or total melanonychia. Histopathological examination revealed 19 nevi (17 junction and 2 compound), 12 lentigos, and 9 cases of functional LM defined as “melanocytic activation” in the matrix epithelium with no increase in melanocyte numbers. None of their patients had malignant melanoma. In this series, benign melanocytic hyperplasia accounted for 77.5% of LM cases overall and for 85% of cases in Caucasian patients. The remaining cases were attributed to “melanocytic activation.”

Reports by Tosti et al. (5) and Labreze et al. (6) together account for 20 of the 85 total cases reported of longitudinal melanonychia in children. None of their patients exhibited malignant histology.

Several case reports involving either melanoma *in situ* or melanoma arising from a child's nail bed/matrix, are also noteworthy. Subungual melanoma, although exceedingly rare in children, has been reported on occasion. Lyall reported the case of a 12-month-old boy with malignant melanoma that arose in a congenital nevus at the tip of his right middle finger and subsequently invaded the nail bed (19). However, this case did not present as LM. Recently, Kiryu reported subungual malignant melanoma developing in a 3-year-old Japanese

**TABLE**  
*Cases of Longitudinal Melanonychia in Children Reported in the Literature*

Author	Date	Ethnicity	S	Age at Diagnosis (years)	Age at Onset	Histologic Diagnosis	Notes
Buka, et al. (this paper)	2001	Latino	M F	2 2	10 months Birth	nevus nevus	
Goettman- Bonvallet et al. (4)	1999	White (33) Black (2) Type V (5)	M=15 F=25	2 (2) 3-5 (6) 6-10 (16) 11-16 (16)	< 1 year (5) 1-5 years (13) >5 ≤10 years (9) >10 years (6) Unknown (7)	Junction nevus (17) compound nevus (2) lentigo (12) functional LM (9)	
Kiryu (8)	1998	Japanese	F	3		malignant melanoma	
Labreze et al. (6)	1996	White	M M M M F F F F	1 <sup>1</sup> / <sub>4</sub> 3 months 10 months 3 4 6 13	Birth Birth 3 months 18 months 3 years 3 years 12 years	not biopsied not biopsied matrical lentigo not biopsied matrical nevus matrical nevus matrical nevus matrical nevus	No change 5 years No change 14 years No change 5 years
Tosti et al. (5)	1996	White	M F M M F M M M M M M	1 19 3 9 6 13 12 11 4 5 2 7	8 months Birth 12 months 5 years 4 years 12 months 10 years 7 years 12 months 4 years Birth 4 years	compound nevus compound nevus junctional nevus junctional nevus junctional nevus compound nevus junctional nevus junctional nevus junctional nevus junctional nevus junctional nevus junctional nevus	
Pomerance et al. (10)	1994	Japanese	F	6	12 months	compound nevus	
Ashina et al. (11)	1993	Japanese	M F M M	11 months 4 1 10	1 month 12 months 6 months 6 years	nevus nevus nevus nevus	
Kikuchi et al. (12)	1992	Japanese	F F F M	3 1 <sup>1</sup> / <sub>4</sub> 7 6	Birth 1 month 12 months 12 months	not biopsied not biopsied not biopsied not biopsied	Sponta- neous res- olution 13 years Sponta- neous res- olution 6 years Fading at 9 years
Fleegler (13)	1992	Asian White	M F	12 6	9 years 24 months	nevus junctional nevus	Atypical melanocytes

**TABLE**  
*Continued*

Author	Date	Ethnicity	S	Age at Diagnosis (years)	Age at Onset	Histologic Diagnosis	Notes
			M	10	9 years	junctional nevus	Atypical melanocytes
Brantley et al. (14)	1991	White	M	1	8 months	compound nevus	
Wong et al. (15)	1991	White	M	9	Birth	compound nevus	
Kato et al. (9)	1989	Japanese	M	4	12 months	melanoma <i>in situ</i>	
			F	2	18 months	melanoma <i>in situ</i>	
			F	1	6 months	melanoma <i>in situ</i>	
Hori et al. (16)	1988		F	3		malignant melanoma	
Coskey et al. (17)	1983	White		4 months	Birth	compound nevus	
Kopf et al. (2)	1980	n/a	F	14	n/a	melan. hyperplasia	
		n/a	M	10	5 years	junctional nevus	
Ohtsuka et al. (18)	1978	Japanese	F	10 months	Birth	junctional nevus	
Leyden et al. (7)	1972	Black	F	12	Birth	nevus	

n/a = not available

girl (8). A longitudinal melanotic nail band darkened and broadened over a two-year period to involve the entire nail-bed and adjacent peri-ungual area. Goettmann-Bonvallot agreed that this might conceivably have been a melanoma *in situ*, but raised the possibility that it might also have been a “highly-active” junctional nevus (4). These authors also consider the three melanomas diagnosed by Kato et al. to be cases of benign melanocytic hyperplasia (9). Over the last 35 years, no more than 5 of 85 children with LM (5.9%) have displayed histologic evidence of malignancy, and some of these cases have been called into question.

Confronted with a child with LM, the clinician should carefully explain to the parents the issues involved in management. The remote chance of finding a melanoma in a pediatric patient with stable LM or the small possibility of the development of melanoma later on, must be balanced against the small but real risks of general anesthesia in children and the risk of damage to the nail matrix and subsequent permanent nail deformity. Since the data suggests that the risk of melanoma is exceedingly small,

some authors have suggested watchful waiting with biopsy reserved for when LM develops rapid darkening or change in width.

However, many parents will opt for matrix biopsy when presented with the survival statistics of subungual melanoma. In skilled surgical hands, this approach has little morbidity and resolves the medical problem and parental anxiety. Certainly, when periodic re-examination and/or attentiveness to change in the lesion are in doubt, it can be argued that biopsy and excision are appropriate. Ultimately, both the clinician and the parents must decide on which options to follow.

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