Subungual Melanoma: A Systematic Review

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J.A.M. has nothing to disclose
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Introduction

- Subungual melanoma is a relatively rare disease that carries a poor prognosis[1-3]
- Several retrospective studies have been conducted, but incidence, recurrence, and survival rates vary greatly depending on the investigation[1-20]
- Current NCCN guidelines also offer little insight as to the specific surgical management of subungual melanoma[21]
- We aim to utilize a systematic review to better appraise this pathology and to examine applicable surgical interventions

Introduction

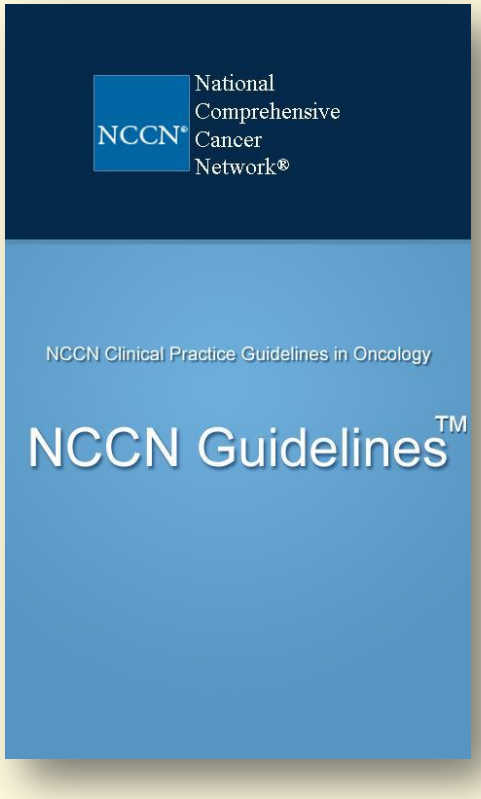

Fig. 1. NCCN Guidelines

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Methods

- A **Meta-Analysis** provides comparison of similar, randomized controlled studies to increase sample size
- Unfortunately, no such prospective trials exist specifically for treatment of subungual melanoma
- A **Systematic Review** is elected as this allows the compilation of study data from case series that are non-randomized or controlled

Methods

- A systematic lit. review using MEDLINE was performed
- "Subungual Melanoma" or "Subungual Melanosis"
- 1965 to 2012
- English language, Human citations

Fig. 2. Clinical presentation of subungual melanoma as a nail streak

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Methods

Inclusion:

- F/u adequate to determine 5 year survival
- >5 cases (to exclude case reports)
- Surgical treatment data
- Hand +/- foot
- Pathology data or clinical presentation or trauma data

Exclusion:

- <5 cases
- Lower extremity only
- Treatment specific (ex. specific surgical technique, ILP only)
- Histologic, pathologic, or basic science studies with no treatment (i.e. Acral or in-situ only)
- No surgical data

Methods

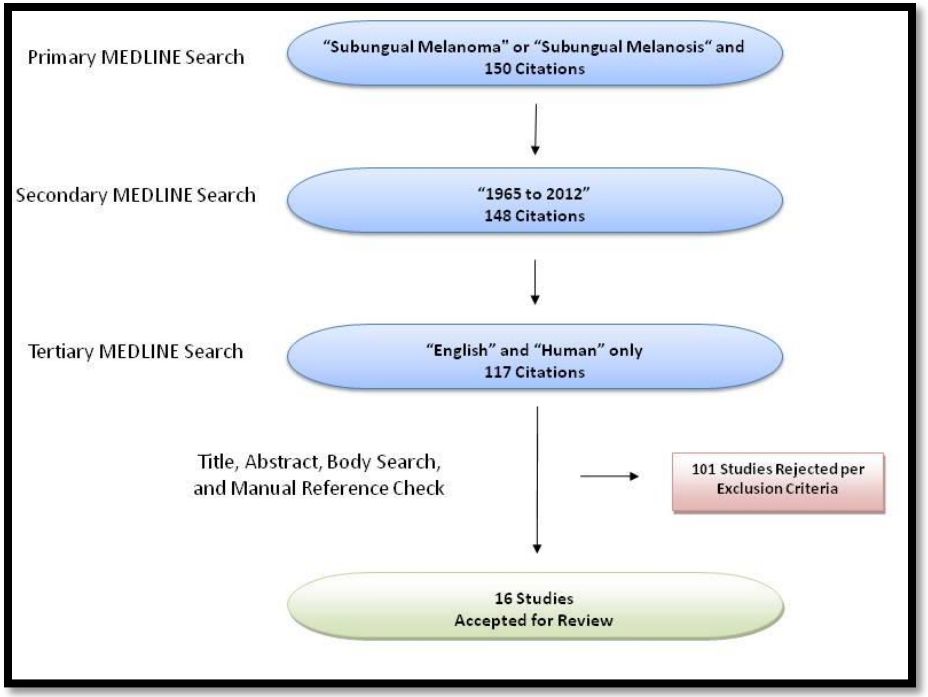

Fig. 3. Attrition Search

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- Results
  - 117 sources were reviewed
  - **16** met the established review criteria[1,2,4,5,7-18]

Author	Year	PMID#	Study Dates	# of Patients	Study Design	Sex Male	Sex Female	Caucasian	Black	Other or Unknown	Population	Age Mean (Years)	Age Range	Follow Up
Cohen et al[9]	2008	18086464	1992-2004	49	RR	18	31	39	4	6	NYC, NY	66	24-83	38 months
O'Leary et al[14]	2000	10986996	1970-1996	93	RR	53	40	82	11	0	Duke, NC	55.4	10-84	5.2 years
Quinn et al[4]	1996	8724488	1950-1994	38	RR	24	14	38	0	0	Sydney, Australia	59	33-82	53 months
Kridge et al[13]	1995	7631249	1970-1986	20	RR	8	12	7	13	0	Cape Town, South Africa	51.3	22-79	Not mentioned
Finely et al[3]	1994	8023276	1971-1989	22	RR	12	10	0	0	0	Buffalo, NY	59	x	33 months (median)
Heaton et al[11]	1994	8129491	1956-1988	46	RR	46	18	0	0	0	Houston, TX	59.5	22-83	9.5 years (median)
Park et al[16]	1992	1466623	1979-1989	100	RR	0	0	0	0	0	Aberdeen, Scotland	67	33-93	Not mentioned
Rigby and Briggs[17]	1992	1623342	1967-1991	24	RR	11	13	0	0	0	Bristol, UK	61.6	16-96	3 months - 18 years
Hudson et al[12]	1990	2230492	1970-1987	13	RR	7	6	5	3	3	Cape Town, South Africa	47.5	22-79	Up to 36 months
Daly et al[10]	1987	3586679	1950-1975	33	RR	11	22	28	3	2	NYC, NY	56	28-89	8 year min
Takematsu et al[18]	1985	3995482	1969-1982	16	RR	12	14	0	0	0	Sendai, Japan	56	30-84	Up to 110 months
Papachristou and Fortner[15]	1982	7144198	1956-1976	52	RR	25	27	0	0	0	NYC, NY	65	28-88	Not mentioned
Patterson and Helwig[7]	1980	7427913	Not Mentioned	66	RR	44	22	56	3	7	Washington D.C.	61	23-95	Not mentioned
Welvaart and Schraffordt Koops[20]	1978	365409	1966-1976	25	RR	12.50	12.5	0	0	0	The Netherlands	64	x	9 mo - 10 years
Pack and Opreza[19]	1967	6018519	1932-1967	72	RR	32	40	0	0	0	NYC, NY	57	27-79	Not mentioned
Das Gupta and Brasfield[8]	1965	PMC1408999	1929-1964	34	RR	14	20	0	0	0	NYC, NY	26/34 over 50 (2 below 29)	x	Not mentioned

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Results

- Mean age of **47.2 years** (range 10 to 96)
- M to F ratio - 1.09 to 1.00
- Caucasians were affected more than the other races (82%)
- **Incidence:** 3.03% of cutaneous melanomas (range 0.31-16%)

Results

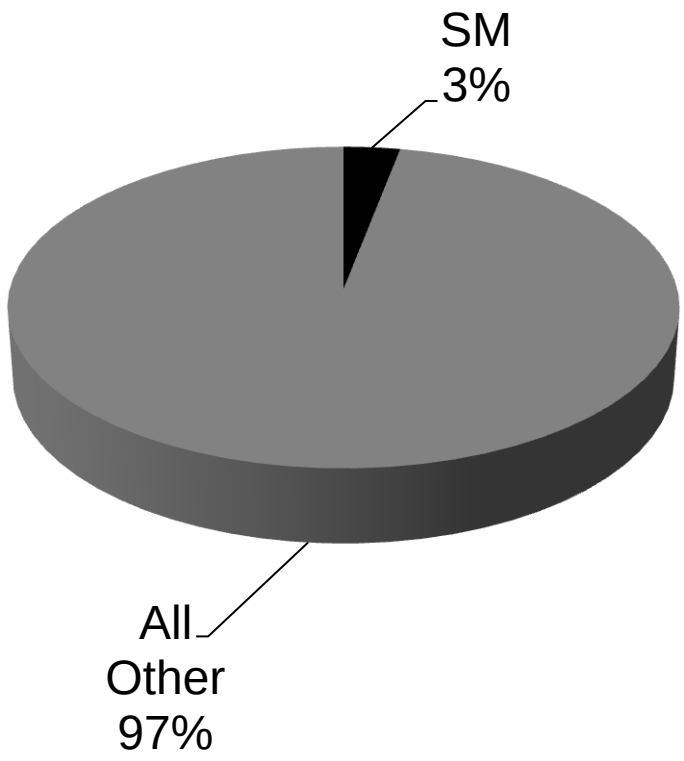

Fig. 4. Incidence of subungual melanoma presenting for treatment

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Results

- Thumb **60%** of hand cases
- Hallux **78%** of lower extremity cases
- **55%** presented with discoloration or nail bed lesion as their primary symptom
- **34%** reported a history of digit trauma
- Average delay to diagnosis was a staggering **18.7 months** (range 12-30 months)

Results

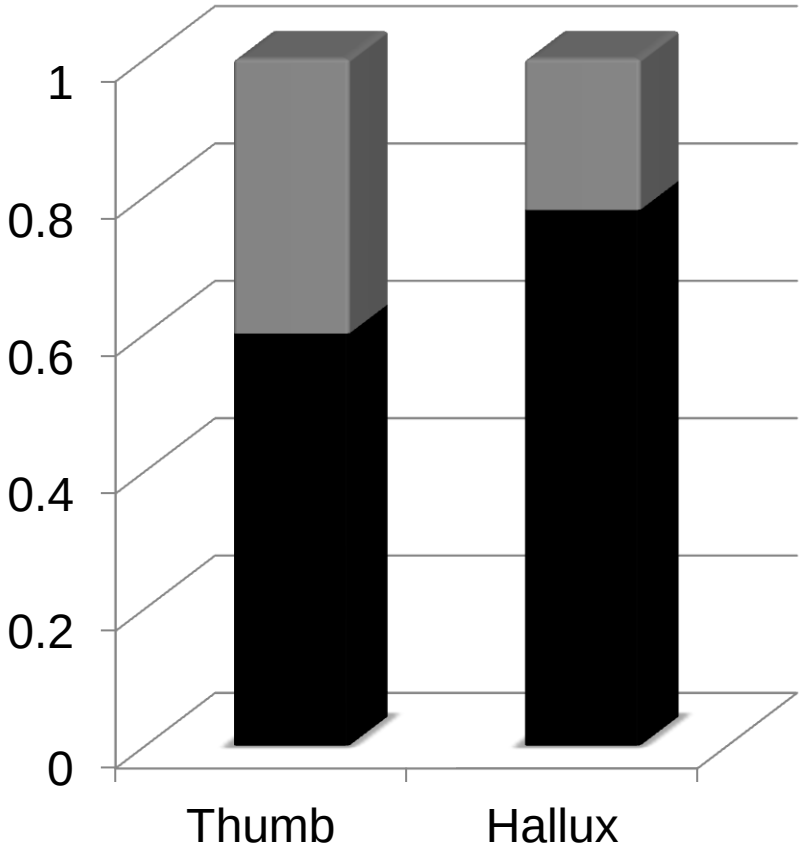

Fig. 4. Percentage of Thumb and Hallux cases

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Results

- **4.22 mm** mean Breslow depth (range 2.1-6.1 mm)
- Clark's level IV or V was by in far the most common
- 100 of the 213 reported patients were Stage I
- 72, 33 and 8, were Stages II, III, and IV respectively
- Mitotic figures were reported in only one study
- **59%** of lesions were with ulceration
- Acral lentiginous - most common clinicopathologic variant (**57%**)

Results

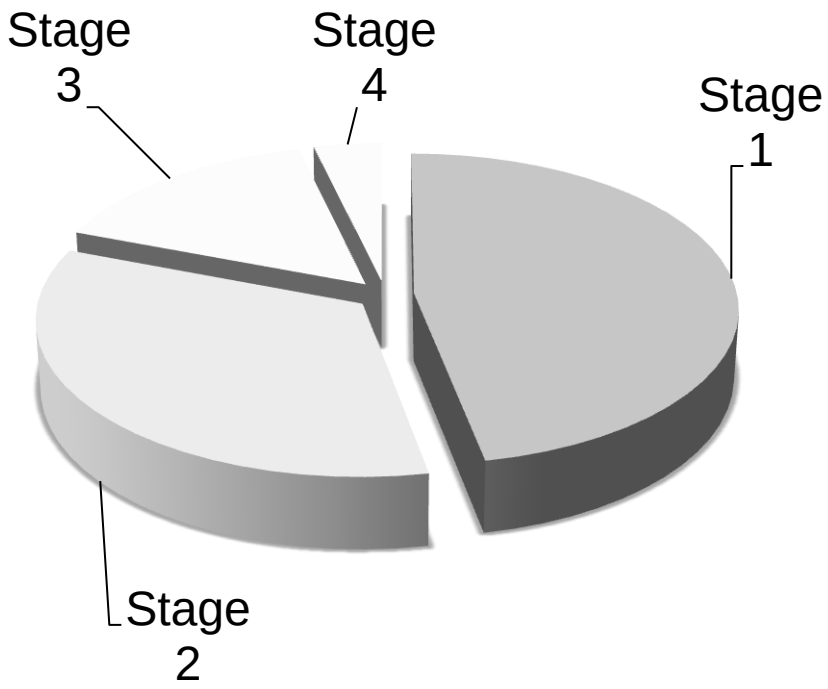

Fig. 5. Stages of Subungual Melanoma

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Results

- Surgical details for 645/669 total cases found
- Amputation was the most common treatment occurring 95% of the time
- The proper level of amputation was a controversial topic among the reviewed manuscripts
- Newer studies recommended more distal amputation - IP or PIP level of amputation were most common
- Utilized 63% of the time in the hand
- MTP joint or more proximal amputation was performed most often in lower extremities (99%)

Results

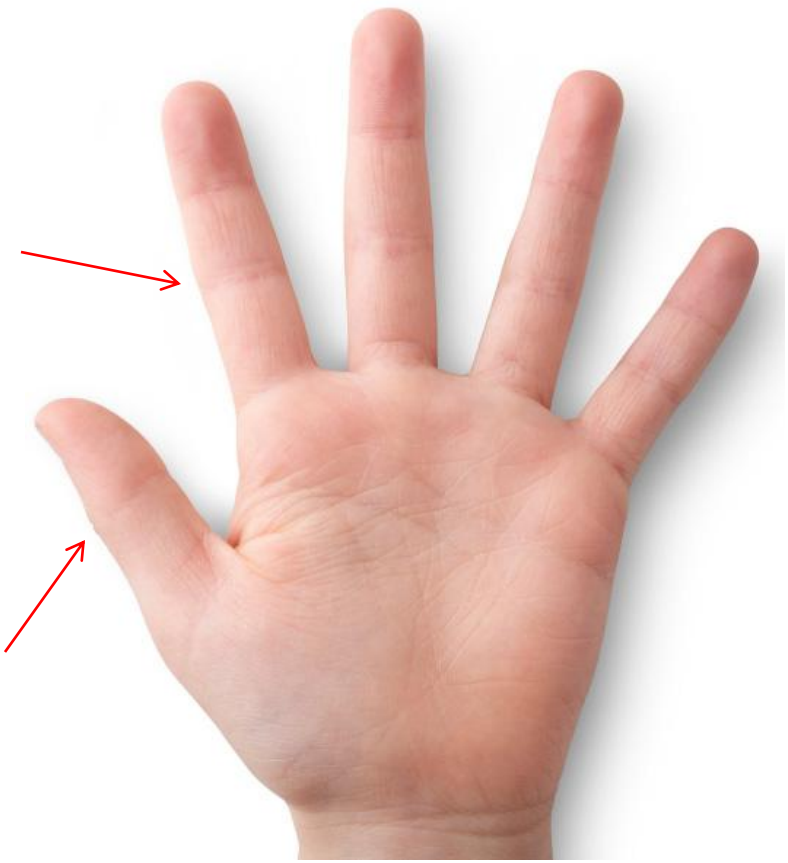

Fig. 6. Location of Digit Amputation

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Results

- The majority of studies did not specify if an upper *or* lower extremity was treated with a specific procedure
- These were categorized into:
  - Amputation **at or distal** to the DIP/IP *or*
  - Amputation **proximal** to the DIP/IP
- After data merger, **proximal** amputation predominated 67% of the time

Results

- 30 sentinel lymph node biopsies (SLNB) were recorded
- 5/30 were positive
- All five positive biopsies underwent lymph node dissection and one was positive
- 241 patients had therapeutic or elective node dissections
- Of these, 45% had positive nodes

Fig. 2. Clinical presentation of subungual melanoma as a nail streak

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Results

- No study reported surgical complications
- Local or distant recurrence was noted in 27% of cases
- Unable to elucidate the exact number of overall local versus distant recurrences from the data available
- Overall mean 5-year survival was **46%** across the studies
- 5-year survival for stage I disease was **55%**
- 5-year survival for stage II or greater disease was a dismal **35%**

Results

Five Year Survival

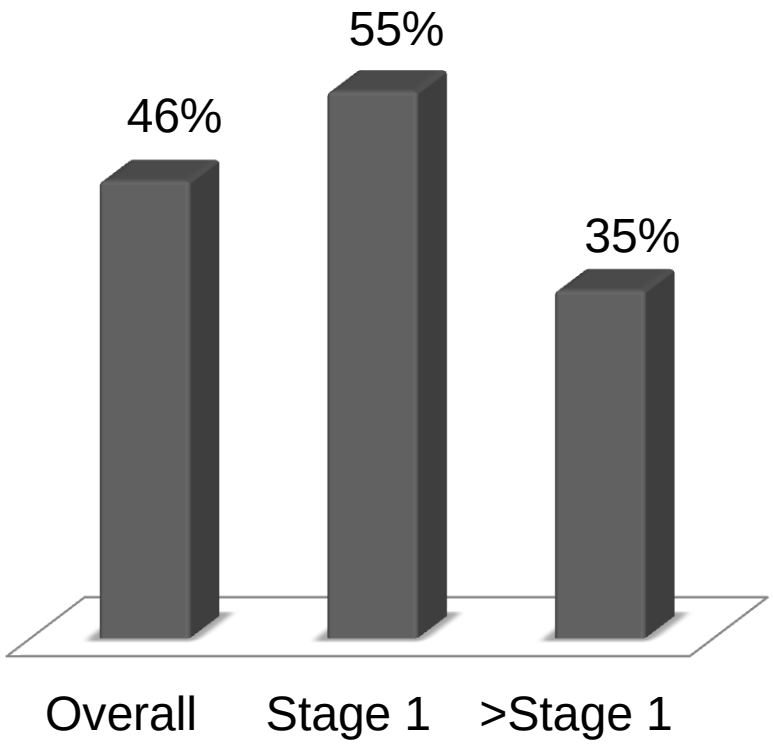

Fig. 6. FiveYear Survival

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Conclusions

- Mean age across the studies 47.2 years
- Younger versus mean age of cutaneous melanoma diagnosis (61 years)[22]
- Marked delay in diagnosis (18.7 months)
- Earlier recognition of this disease may improve survival
- Suspicious subungual lesions should be biopsied to rule out neoplastic disease (<4wks)[23]

Conclusions

- Trauma was noted in only 1/3 of the cases
- Likely not causative of malignant changes. May increase attention to changes in the nail bed
- Exceedingly invasive disease (4.2mm), yet does not correlate with low mean stage (I or II)
- Demonstrates how obtaining a true depth is difficult
- Overall, majority of studies conclude **stage** as the most indicative factor of patient prognosis

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Conclusions

- Continue to stage per guidelines until further studies available[21]
- The current evidence does not demonstrate improved survival with a more proximal amputation[9,13]
- Recommend DIP or IP amputation for primary lesions

Conclusions

- Node dissection should be reserved for clinically positive nodes and for positive lymph node biopsy until additional data is available[21]
- Future studies are required to modify the staging system for this insidious pathology

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