Surgical management and lymph node biopsy of rare malignant cutaneous adnexal carcinomas: a population-based analysis of 7591 patients

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Background

Cutaneous adnexal carcinomas comprise a group of rare cutaneous malignancies that are generally considered non-aggressive. Guidelines for the treatment of many of these malignancies are sparse, including guidance on surgical management[1,2] including the utility of lymph node biopsy.[3,4] In addition, there has been minimal concerted effort to understand the differences in survival between the various cutaneous adnexal malignancies. Further, details regarding the prognosis of these malignancies are thus far limited.

Malignant cutaneous adnexal carcinomas can fall into several categories including folliculosebaceous, eccrine, and apocrine.[5] These can develop as a result of malignant transformation of a benign adnexal neoplasm, such as transformation of a spiradenoma into a spiradenocarcinoma or a poroma into porocarcinoma, or may occur de novo, as in a sclerosing sweat duct tumor/microcystic adnexal carcinoma (SSDT/MAC) or sebaceous carcinoma.[5] Histopathology can be challenging, and some lesions have mixed features, defying standardized categorization in one of these groups.[1]

In general, malignant cutaneous adnexal neoplasms are fairly indolent, although cases of metastasis, aggressive behavior, and death are represented in the literature.[6] Given a general lack of information about the prognosis of these malignancies, it can be difficult to decide how to clinically manage them, including determination of surgical margins and assessment of the utility of lymph node biopsy.

Objective, Design, & Participants

Objective: To analyze the prognosis of cutaneous adnexal malignancies, survival relative to surgical management, and utility of lymph node biopsy.

Design: Population-based study of the SEER-18 database from 1975-2016.

Participants: 7591 patients with sweat gland carcinoma, hidradenocarcinoma, spiradenocarcinoma, sclerosing sweat duct tumor/microcystic adnexal tumor (SSDT/MAC), porocarcinoma, eccrine adenocarcinoma, and sebaceous carcinoma

Overall and Disease-Specific Survival

Vital status*	All adnexal	Sweat gland carcinoma	Hidradenocarcinoma	Spiradenocarcinoma	Sclerosing sweat duct tumor (MAC)	Porocarcinoma	Eccrine adenocarcinoma	Sebaceous carcinoma
Stage (Derived AJCC Stage Group, 6th ed (2004-2015)	N=1863	N=70	N=127	N=46	N=236	N=229	N=187	N=968
I	1221 (65.5)	40 (57.1)	56 (44.1)	14 (30.4)	150 (63.6)	140 (61.1)	103 (55.1)	718 (74.2)
II	440 (23.6)	14 (20.0)	54 (47.5)	28 (60.9)	47 (19.9)	64 (27.9)	51 (27.3)	182 (18.8)
III	155 (8.3)	12 (17.1)	11 (8.7)	3 (6.5)	38 (16.1)	20 (8.7)	28 (15.0)	43 (4.4)
IV	47 (2.5)	4 (5.7)	6 (4.7)	1 (2.2)	1 (0.4)	5 (2.2)	5 (2.7)	25 (2.6)
5-year OS based on Stage								
I	79.0 (75.6-82.0)	85.7 (61.7-95.2)	91.1 (74.5-97.1)	80.3 (69.9-85.4)	87.7 (79.2-92.9)	78.4 (67.5-86.1)	80.2 (67.9-88.1)	74.1 (69.0-78.5)
II	74.4 (68.8-79.2)	53.5 (21.2-77.7)	80.9 (63.6-90.6)	60.3 (35.3-78.2)	85.0 (67.6-93.5)	77.4 (60.9-87.6)	72.4 (55.0-85.3)	73.3 (63.7-80.7)
III	67.4 (56.6-76.0)	62.5 (22.9-86.1)	53.3 (17.7-79.6)	--	83.3 (61.0-93.4)	52.9 (24.3-76.3)	81.4 (52.8-93.6)	53.2 (30.3-71.7)
IV	17.1 (4.6-26.5)	--	--	--	--	--	--	30.0 (7.1-57.8)
5-year DSS based on Stage								
I	99.3 (98.2-99.7)	100 (97.6-100)	96.5 (94.0-98.2)	97.9 (95.2-98.1)	96.9 (90.4-99.0)	97.4 (89.7-99.3)	98.7 (91.2-99.8)	99.0 (96.9-99.7)
II	97.8 (95.2-99.0)	87.5 (38.7-98.1)	94.1 (78.4-98.5)	90.3 (66.3-97.5)	93.3 (75.9-98.3)	95.2 (87.3-96.7)	93.9 (77.7-98.5)	98.3 (93.5-99.6)
III	89.0 (79.8-94.2)	71.4 (35.8-92.0)	70.0 (22.5-91.8)	--	83.3 (61.0-93.4)	66.1 (31.6-86.2)	--	79.8 (49.4-93.0)
IV	50.3 (18.5-75.7)	--	--	--	--	--	--	53.7 (13.1-82.7)

Surgical Management

5-year OS (95% CI)	All adnexal	Sweat gland carcinoma	Hidradenocarcinoma	Spiradenocarcinoma	Sclerosing sweat duct tumor (MAC)	Porocarcinoma	Eccrine adenocarcinoma	Sebaceous carcinoma
Punch/shave/incisional biopsy with no additional surgical intervention	65.0 (61.3-69.0)	77.3 (63.5-94.1)	61.4 (46.3-81.5)	--	85.0 (74.6-91.4)	64.5 (53.9-77.3)	69.0 (55.7-85.4)	57.9 (53.2-62.9)
Excisional biopsy as definitive treatment	66.8 (64.3-69.4)	70.5 (61.0-81.4)	66.2 (56.2-78.0)	53.4 (38.4-74.1)	79.7 (73.2-86.6)	65.2 (57.3-74.3)	74.4 (67.4-82.8)	63.2 (59.8-66.9)
Biopsy then narrow excision (<1 cm margin)	78.5 (76.5-80.5)	74.9 (63.2-88.7)	75.3 (65.6-86.4)	74.1 (56.8-96.8)	88.8 (84.8-92.9)	69.4 (62.5-77.1)	77.9 (71.2-85.3)	73.8 (71.1-76.7)
Biopsy then wide local excision (>1 cm margin)	73.2 (70.0-75.9)	85.1 (78.2-92.6)	79.2 (72.1-87.0)	72.5 (55.9-94.0)	78.6 (71.7-86.2)	77.7 (70.0-86.2)	81.3 (74.4-88.9)	71.2 (67.4-75.2)
5-year DSS (95% CI)								
No surgery	90.8 (88.0-93.6)	93.5 (85.2-100)	100 (100-100)	87.5 (67.3-100)	95.9 (91.5-100)	96.3 (91.3-100)	92.7 (85.1-100)	96.2 (94.1-98.4)
Excisional biopsy as definitive treatment	99.4 (99.0-99.9)	96.6 (92.9-100)	96.1 (90.7-100)	95.2 (86.6-100)	--	98.8 (96.6-100)	100 (100-100)	98.6 (97.6-99.6)
Biopsy then narrow excision (<1 cm margin)	99.7 (99.4-100.0)	--	96.3 (91.2-100)	95.7 (87.7-100)	99.6 (98.9-100)	99.3 (97.1-100)	99.2 (97.7-100)	99.5 (98.9-99.9)
Biopsy then wide local excision (>1 cm margin)	98.7 (98.0-99.3)	97.8 (94.8-100)	93.7 (88.8-98.8)	100 (100-100)	99.2 (97.8-100)	99.1 (97.4-100)	99.2 (97.5-100)	97.0 (95.6-98.5)

Radiation and Chemotherapy

Treatment	All adnexal	Sweat gland carcinoma	Hidradeno-carcinoma	Spiradeno-carcinoma	SSDT/MAC	Poro-carcinoma	Eccrine adeno-carcinoma	Sebaceous carcinoma
Radiation								
Beam radiation	396 (5.3)	57 (8.3)	41 (8.6)	8 (6.9)	57 (7.4)	26 (4.1)	68 (12.1)	186 (4.3)
None/Unknown	7109 (94.7)	632 (91.7)	438 (91.4)	108 (93.1)	710 (92.6)	611 (95.9)	494 (87.9)	4125 (95.7)
Chemotherapy								
Yes	106 (1.4)	16 (2.3)	6 (1.2)	1 (0.9)	3 (0.4)	8 (1.3)	9 (1.6)	63 (1.5)
No/Unknown	7492 (98.6)	678 (97.7)	479 (98.8)	116 (99.1)	763 (99.6)	626 (98.7)	558 (98.4)	4262 (98.5)

Lymph Node Biopsy and Survival

Lymph Nodes	All adnexal tumors		
Lymph Nodes Examined			
Nodes not examined	6592 (91.9)		
Nodes examined	578 (8.1)		
Positive (% of examined)	138 (23.9)		
Negative (% of examined)	440 (76.1)		
	Total N=1221	5-year OS	5-year DSS
Stage I Examined N=112			
Nodes not examined (% of total)	1109 (90.8)	69.7 (66.1-72.4)	99.3 (99.6-100)
Nodes positive (% of examined)	0 (0)	--	--
Nodes negative (% of examined)	112 (100)	83.9 (82.3-94.3)	100 (96.3-100.2)
	Total N=440		
Stage II Examined N=67			
Nodes not examined (% of total)	363 (82.5)	62.2 (54.7-64.9)	97.6 (98.9-99.5)
Nodes positive (% of examined)	0 (0)	--	--
Nodes negative (% of examined)	67 (100)	84.6 (73.1-94.1)	96.9 (89.7-99.1)
	Total N=155		
Stage III Examined N=78			
Nodes not examined (% of total)	77 (49.6)	58.4 (46.6-70.9)	89.6 (80.6-95.4)
Nodes positive (% of examined)	62 (79.5)	58.0 (45.5-71.3)	87.1 (76.9-94.2)
Nodes negative (% of examined)	16 (20.5)	47.1 (23.6-72.4)	94.1 (71.3-99.3)
	Total N=47		
Stage 4 Examined N=11			
Nodes not examined (% of total)	36 (76.5)	20.6 (3.7-37.9)	73.5 (55.6-87.1)
Nodes positive (% of examined)	9 (81.8)	22.2 (2.8-60)	77.9 (40.0-97.1)
Nodes negative (% of examined)	2 (18.1)	--	--

Lymph Node Biopsy Utility

	Overall Survival					Disease-specific Survival					
	Prevalence of death in patients with nodal biopsy	Accuracy	Sensitivity	Specificity	PPV	NPV	Prevalence of death due to NMSC with examined node	Accuracy	Sensitivity	Specificity	PPV	NPV
All	0.26	0.71 (0.65-0.76)	0.46	0.80	0.46	0.80	0.04	0.76 (0.70-0.81)	0.77	0.76	0.14	0.98
I	0.16	0.83 (0.76-0.90)	0.0	1.00	--	0.83	--	--	--	--	--	--
II	0.15	0.84 (0.73-0.92)	0.00	1.00	--	0.84	0.00	0.97 (0.89-0.99)	0.00	1.00	--	0.97
III	0.44	0.43 (0.31-0.54)	0.74	0.18	0.41	0.47	0.11	0.30 (0.20-0.41)	0.89	0.23	0.12	0.94
IV	0.67	0.75 (0.42-0.94)	0.87	0.50	0.78	0.67	0.16	0.42 (0.15-0.72)	1.00	0.30	0.22	1.00

Conclusions

- These adnexal carcinomas have excellent DSS.
- **Narrow excisions demonstrate better 5-year DSS and OS compared with wide local excision**.
- **Lymph node biopsy is a poor predictor of survival** in advanced stage disease and utility is limited.

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