

Review of Allergic Contact Dermatitis and other Eczemas Masquerading as Malignancies and vice versa

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Introduction

Allergic contact dermatitis (ACD) is a commonly presenting type IV hypersensitivity reaction that requires timely and accurate diagnosis for prompt treatment and removal of offending agents. Rarely, ACD and other forms of dermatitis may be misidentified as a malignant disease process and vice versa.

Misidentification of dermatitis and malignancies can lead to delay in treatment, prolongation of symptoms, exposure to unnecessary diagnostic and therapeutic modalities, and negative psychological effects from being diagnosed with cancer.

We conducted a review of literature to summarize documented cases and details related to their presentations including age, sex, location of lesions, histology, initial and final diagnoses.

Methods

- Online database search for English-language articles involving cases of ACD and other eczemas initially misidentified as malignancies and vice versa
- Databases used were PubMed and OVID Medline 1946 to 2020.
- Searches were limited to appropriate search terms including mimicking, masquerading, eczema, contact, allergic, dermatitis, and malignancy.
- All study types and journals were considered for review.
- Titles and abstracts were then screened by one investigator for inclusion.
- Additional articles identified through related articles and citations were included for review.
- Titles and abstracts meeting relevant inclusion criteria were then selected for full review.
- Detailed information including patient sex, age, initial diagnosis, treatment, patch testing, histology and final diagnosis were extracted for further analysis.

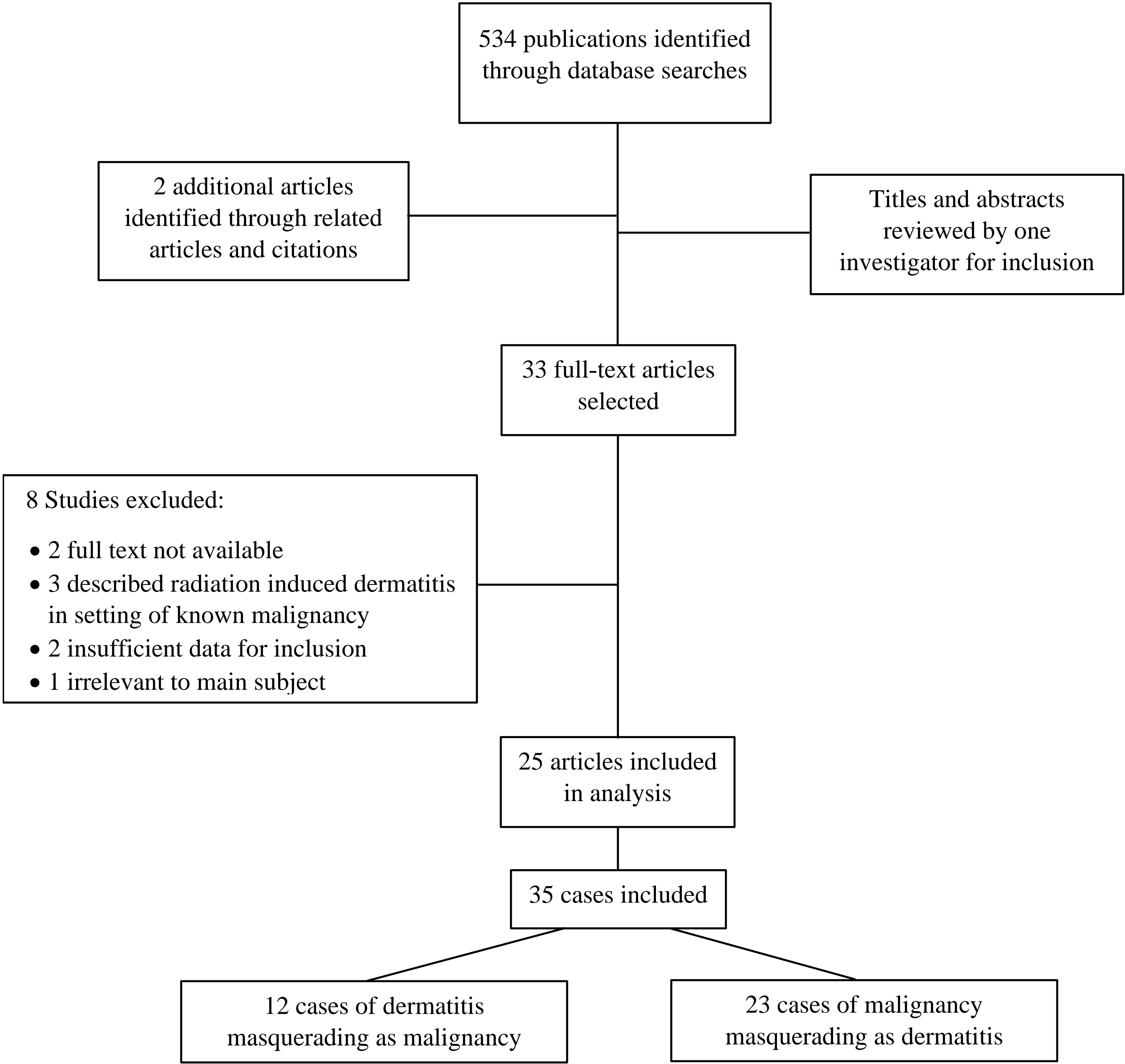


Figure 1 Literature search and article selection process

Results

Study	Year	Age	Sex	Location	Patch Test	Results	Histology	Initial Diagnosis	Final Diagnosis	Allergen	Treatment	Comments
Orbaneja (1)	1976	54	M	right thigh	Yes	**** to striker part of a box of matches	Dense infiltrate, band-like with histiocytes, lymphocytes and some eosinophils. Lymphocyte exocytosis, sometimes forming nests and limited spongiosis.	MF	LCD (ACD)	Box of matches	NR	Patient kept a box of matches in clothing which aligned with location of lesion
Orbaneja (1)	1976	64	M	right thigh, face, forearms, hands	Yes	**** to striker part of a box of matches	Acanthotic epidermis. Dense infiltrate in the form of a superficial band, consisting of histiocytes and lymphocytes without nest formation found in the dermis.	MF	LCD (ACD)	Box of matches	NR	Patient kept a box of matches in clothing which aligned with location of lesion
Orbaneja (1)	1976	39	M	left thigh	Yes	**** to striker part of a box of matches	Superficial infiltrate of lymphocytes and histiocytes	MF	LCD (ACD)	Box of matches	NR	-
Orbaneja (1)	1976	42	M	right and left thigh	Yes	*+ to the striker part of the box of matches	Lympho-histiocytic infiltrate, acantholysis of the epidermis and spongiosis	MF	LCD (ACD)	Box of matches	NR	-
Lobur (2)	1983	33	F	Left face	NR	-	compatible only with scar formation	BCC	Irritant dermatitis	Homemade salve	Wet compresses, erythromycin, topical steroids	Previous hx of applying salve to site four years prior. Salve of unknown ingredients.
Fisher (3)	1987	27	M	Trunk, left thigh	Yes	marked reaction to mercaptobenzothiazole	compatible with early mycosis fungoides	MF	ACD	Rubber eraser	Topical steroids, removal of eraser	-
Zenarola (4)	1993	78	F	Tongue	Yes	*** to mercuric chloride, ** to potassium dichromate	Epithelial acanthosis with some downward proliferation of the rete ridges	SCC	ACD	-	NR	-
Hague (5)	2006	61	M	below right eye	Yes	****+ to nickel	Acute inflammatory infiltrate within the epidermis with acanthosis and a more chronic infiltrate within the dermis	BCC	ACD	Gold plated frame glasses with nickel exposed on side of lesion	Removal of glasses	-
Ferze (6)	2008	55	F	left breast	Yes	*** to fluticasone and betamethasone. ** to propylene glycol, parabens, chlorocresol. ** to neomycin and gentamycin	Dermatitis with spongiosis and moderate lymphocytic infiltration	Paget's disease	ACD	Topical products	Topical steroids. Removal of all topical agents, used saline compresses, vaseline, short course of systemic steroids	-
Hession (7)	2010	68	F	Left thigh, buttocks, genitals	Yes	** to Reactive Black 5, blue238 red 238, carba mix, diphenylguanidine	Superficial and deep perivascular lymphoid infiltrate with a palisading granulomatous response	CTLC	LCD	Underwear, panty hose	Topical steroid, avoid white elastic-free underwear	-
Mendes (8)	2010	44	F	buttocks, groin	Yes	*** to methylchloroisothiazolinone and quaternium-15	Chronic dermatitis with prominent epidermotropism and minimal spongiosis and eosinophils	MF	LCD	Baby wipes	Topical steroids, etanercept, infliximab. Removal of baby wipes improved sx within 2 weeks.	Repeat questioning found use of baby wipes for past two years which contained both allergens.
Vigil (9)	2020	67	F	face, shoulders	NR	-	Spongiotic dermatitis with eosinophils and langerhans aggregates	Carcinoid syndrome	ACD	Fabric softener	Topical and oral steroids	-

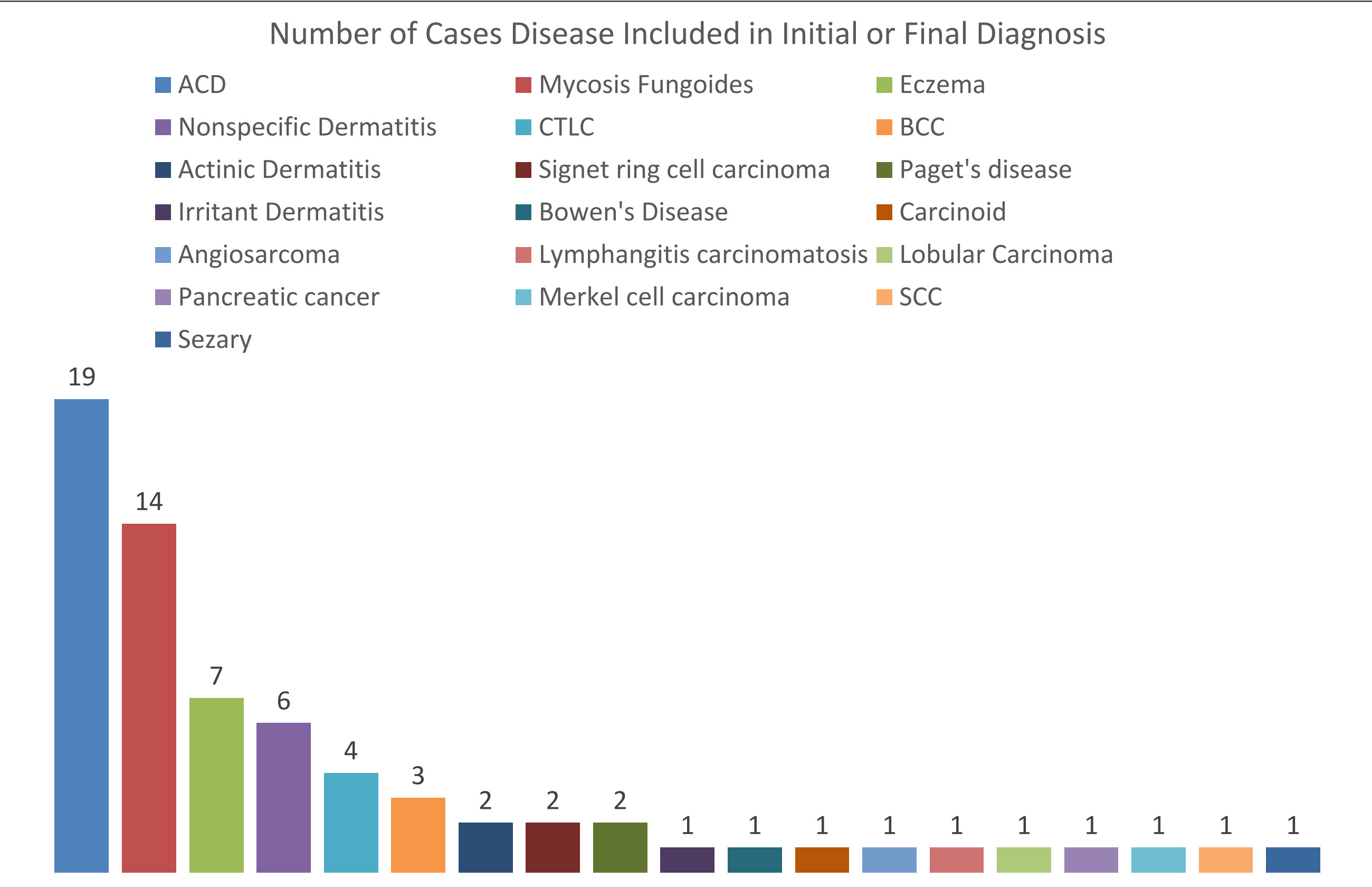
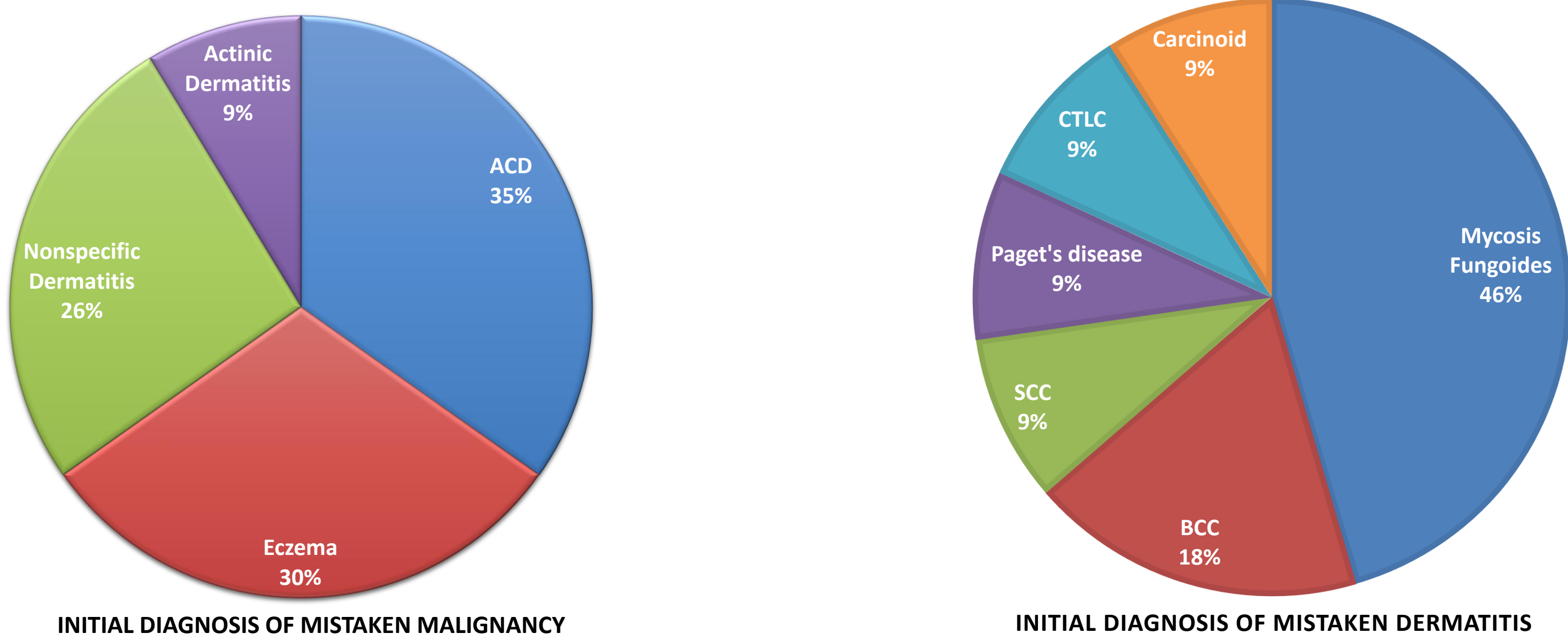
NR – Not Reported SCC – Squamous Cell Carcinoma BCC –Basal Cell Carcinoma MF – Mycosis Fungoides ACD – Allergic Contact Dermatitis CTLC – Cutaneous T-Cell Lymphoma LCD – Lymphodermoid Contact Dermatitis

Table 1: Cases of malignancies masquerading as dermatitis

Study	Year	Age	Sex	Location	Patch Test	Results	Histology	Initial Diagnosis	Final Diagnosis	Allergen	Treatment	Other comments
Stransky (10)	1986	56	M	Neck	Yes	**+ to Nickel	Typical of mycosis fungoides	ACD	MF	-	NR	-
Levin (11)	1999	65	M	Extremities	NR	-	Nonspecific subacute dermatitis	Eczema	Pancreatic Cancer	-	Topical and systemic steroids.	Initially thought to be eczema, then CTLC prior to final diagnosis
Palaia (12)	2002	47	F	Abdomen, gluteal region, lower extremities	NR	-	Cutaneous lymphangitis carcinomatosa	ACD	Cutaneous lymphangitis carcinomatosa	-	Failed oral steroids followed by chemotherapy	-
De Giorgi (13)	2005	83	F	left fifth toe	NR	-	Multiple islands and nests of basaloid cells within the superficial and mid-dermis	Chronic dermatitis	BCC	-	failed antibiotics	-
Akouaouach (14)	2005	87	F	buccal mucosa	NR	-	infiltrate of inflammatory cells forming a dense band below the epidermis characterized by the presence of atypical lymphoid cells with large convoluted nuclei and significant epidermotropism	Eczema	Sezary syndrome	-	failed topical steroids and antihistamines. Then treated with fluticasone and UVA light treatment	-
Martyn-Simmons (15)	2006	37	F	face	NR	-	Dense pleomorphic lymphocytic infiltrate located mainly around mid and superficial dermal vessels	ACD	Adult T-cell leukaemia/lymphoma	-	failed topical and systemic steroids	Patient died within 6 months of diagnosis
Ahn (16)	2007	60	F	face	NR	-	Signet ring cells scattered in the dermis.	ACD	Gastric signet ring cell carcinoma	-	failed topical and oral medications for suspected ACD. Followed by chemotherapy resulting in significant improvement	-
Agar (17)	2009	64	M	Arms	Yes	** to Para-phenylenediamine	Lymphocytic infiltrate in the papillary dermis with epidermotropism and preponderance of CD4+ T Cells	Actinic Dermatitis	CTLC	-	failed initial oral steroids, started on chemo but died	CTLC progressed to adult T-cell leukaemia lymphoma and subsequent death 12 months after initial presentation
Agar (17)	2009	60	M	NR	Yes	*** to nickel, cobalt, sesquiterpene lactone, colophony	Perivascular and papillary dermal infiltrate f predominantly CD4+ lymphoid cells, with exocytosis of cells into the epidermis forming early psautier microabscesses	ACD	CTLC	occupational exposure	failed avoidance of allergens	Deteriorated with development of erythroderma. Diagnosed with Sezary syndrome and subsequently died
Agar (17)	2009	62	M	Trunk, limbs, face	Yes	** cloquinal	Chronic dermatitis. Repeat biopsy showed epidermotropism with psautier microabscesses consisting of abnormal large atypical T lymphocytes.	Actinic Dermatitis	CTLC	-	failed prednisone and ciclosporin	deteriorated with development of erythroderma. Diagnosed with Sezary syndrome and subsequently died
Singla (18)	2009	24	F	left breast	NR	-	Acanthotic epidermis and prolonged rete pegs. Presence of large round cells, with moderate to abundant pale staining cytoplasm, permeating singly and in groups in all layers of the epidermis. Nuclei were vesicular with prominent nucleoli	Eczema	Paget's of the breast with underlying multifocal infiltrating ductal carcinoma	-	failed topical steroids followed b radical mastectomy.	-
Chuang (19)	2012	76	M	Forearms	NR	-	Poorly cohesive cluster of polygonal or round cells with irregular and conspicuous nuclei, infiltrating upper and middle dermis. Some with typical morphology of signet-ring cells	Eczema	Gastric signet ring cell carcinoma	-	Topical steroids	-
Trinh (20)	2013	98	M	face	NR	-	Cutaneous angiosarcoma	Eczema	Cutaneous Angiosarcoma	-	failed topical steroids. Resolved with radiation therapy	-
Craven (21)	2015	91	F	Right leg	NR	-	NR	ACD	Merkel Cell Carcinoma	-	-	-
Navaratnam (22)	2015	75	F	Right leg	NR	-	Infiltrate of malignant cells consistent with spread from an infiltrating lobular carcinoma of the breast	Dermatitis	cutaneous metastasis of infiltrating lobular carcinoma	-	failed topical steroids. Then treated with an aromatase inhibitor	-
Shamim (23)	2019	70	M	Palms	NR	-	Multifocal spongiosis, psoriasiform epidermal hyperplasia, parakeratosis	ACD	MF	-	Methotrexate followed by radiation therapy	-
Shamim (23)	2019	82	M	Upper extremities, palms, soles, groin	NR	-	Multifocal spongiosis, psoriasiform epidermal hyperplasia, ulceration, parakeratosis	Spongiotic dermatitis	MF	-	Cyclosporine, etanercept, infliximab, adalimumab, ixekizumab, methotrexate, ustekinumab	-
Shamim (23)	2019	60	F	Head and neck, trunk, palms, upper and lower extremities, armpits	NR	-	Multifocal spongiosis, parakeratosis, psoriasiform epidermal hyperplasia	Dermatitis	MF	-	Systemic steroids, topical steroids, tacrolimus, NBXVB	-
Shamim (23)	2019	66	F	Head and neck, trunk, upper and lower extremities	NR	-	Multifocal spongiosis, parakeratosis, mild irregular epidermal hyperplasia	Chronic Dermatitis	MF	-	Systemic steroids, methotrexate, topical steroids, NBXVB	-
Shamim (23)	2019	77	F	Scalp, trunk, lower extremities, groin	NR	-	Multifocal spongiosis, parakeratosis	Perivascular dermatitis	MF	-	systemic steroids, methotrexate, topical steroids, NBXVB (narrow band ultraviolet B)	-
Shamim (23)	2019	80	F	scalp, trunk, upper and lower extremities	NR	-	Multifocal spongiosis, parakeratosis, psoriasiform epidermal hyperplasia	ACD	MF	-	Topical steroids	-
Chiba (24)	2019	58	M	Face, back	NR	-	Band-like atypical lymphocytic infiltration into the dermis. Atypical epidermotropic lymphocytes without spongiosis in the epidermis, which formed psautier's microabscesses	Eczema	MF	-	Topical steroids and dupilumab followed by NBXVB after diagnosis	-
Yu (25)	2019	48	M	left palm	NR	-	Consistent with BD	Eczema	BD	NR	resection of lesion	-

NR – Not Reported SCC – Squamous Cell Carcinoma BCC –Basal Cell Carcinoma MF – Mycosis Fungoides ACD – Allergic Contact Dermatitis CTLC – Cutaneous T-Cell Lymphoma LCD – Lymphodermoid Contact Dermatitis BD – Bowen's Disease

Table 2: Cases of dermatitis masquerading as a malignancy



Discussion and Conclusions

Review of these cases show that while atypical, ACD and malignancies may initially masquerade as the other, potentially resulting in delay in necessary treatment. In the setting of a thorough history and physical, dermatologists should be aware of potential dermatologic mimickers including ACD and mycosis fungoides. Utilization of appropriate patch testing and skin biopsy will help guide the clinician to the correct diagnosis.

References

- Orbaneja JG, Diez LI, Lozano JL, Salazar LC. Lymphomatoid contact dermatitis: a syndrome produced by epicutaneous hypersensitivity with clinical features and a histopathologic picture similar to that of mycosis fungoides. Contact Dermatitis 1976;2(3):139–43.
- Lobur DM, Bailin PL, Taylor JS. Severe irritant dermatitis mimicking a basal cell carcinoma. Cleve Clin Q 1983;50(4):465–7.
- Fisher AA. Allergic contact dermatitis mimicking mycosis fungoides. Cutis 1987;40(1):19–21.
- Zenarola P, Lomuto M, Bisceglia M. Hypertrophic amalgam dermatitis of the tongue simulating carcinoma. Contact Dermatitis 1993;29(3):157–8.
- Hague J, Ilchysshyn A. Nickel allergy mimicking basal cell carcinoma. Contact Dermatitis 2006;54(6):344–5.
- Feroze K, Manoj J, Venkitakrishnan S. Allergic contact dermatitis mimicking mammary paget's disease. Indian J Dermatol 2008;53(3):154–5.
- Hession MT, Scheinman PL. Lymphomatoid allergic contact dermatitis mimicking cutaneous T cell lymphoma. Dermatitis 2010;21(4):220.
- Mendes G, Beckford A, Demierre M-F. Lymphomatoid contact dermatitis to baby wipes. Arch Dermatol 2010;146(8):934–5.
- Vigil N, Hamann D. Allergic Contact Dermatitis masquerading as carcinoid syndrome. Dermatitis. 2020. Submitted.
- Stransky L. Contact mycosis fungoides? Contact Dermatitis 1996;35(2):121.
- Levin J, Camisa C. Unresponsive eczematous dermatitis: a case of pancreatic cancer masquerading as cutaneous T cell lymphoma. Cutis 1999;64(2):113–4.
- Palaia I, Angioli R, Cutillo G, Mancini N, Panici PB. Skin relapse from cervical cancer. Gynecol Oncol 2010;146(8):934–5.
- de Giorgi V, Salvini C, Massi D, Sestini S, Difonzo E, Carli P. Ungual basal cell carcinoma on the fifth toe mimicking chronic dermatitis: case study. Dermatol Surg 2005;31(6):723–5.
- Akouaouach H, Mortaki A, Peppersack T. A typical case of Sezary syndrome mimicking an eczema. Acta Clin Belg 2005;60(1):13–6.
- Martyn-Simmons CL, Holden CA. Adult T-cell leukaemia/lymphoma masquerading as a hair dye allergy. Br J Dermatol 2006;154(1):196–7.
- Ahn S-J, Oh S-H, Chang S-E, et al. Cutaneous metastasis of gastric signet ring cell carcinoma masquerading as allergic contact dermatitis. J Eur Acad Dermatol Venereol 2007;21(1):123–4.
- Agar N, Morris S, Russell-Jones R, Hawk J, Whittaker S. Case report of four patients with erythrodermic cutaneous T-cell lymphoma and severe photosensitivity mimicking chronic actinic dermatitis. Br J Dermatol 2009;160(3):698–703.
- Singla V, Virmani V, Nahar U, Singh G, Khandelwal NK. Paget's disease of breast masquerading as chronic benign eczema. Indian J Cancer 2009;46(4):344–7.
- Chuang Y-T, Than K-Y, Choong M-Y, Li T-S. Unhealed metastatic cutaneous manifestation masquerading as bilateral forearm eczema. Am Surg 2012;78(4):E196–7.
- Trinh NQ, Rashed I, Hutchens KA, Go A, Melian E, Tung R. Unusual clinical presentation of cutaneous angiosarcoma masquerading as eczema: a case report and review of the literature. Case Rep Dermatol Med 2013;2013:906426.
- Craven E, Alexandroff A, Liu JKD, Hillier S. Merkel cell carcinoma mistaken for allergic contact dermatitis. BMJ 2015;351:h4635.
- Navaratnam AV, Chandrasekharan S. Remote cutaneous breast carcinoma metastasis mimicking dermatitis. Indian J Dermatol 2015;60(1):106.
- Shamim H, Johnson EF, Gibson LE, Comfere N. Mycosis fungoides with spongiosis: A potential diagnostic pitfall. J Cutan Pathol 2019;46(9):645–52.
- Chiba T, Nagai T, Osada S-I, Manabe M. Diagnosis of Mycosis Fungoides Following Administration of Dupilumab for Misdiagnosed Atopic Dermatitis. Acta Derm Venereol 2019;99(9):818–9.
- Yu S-R, Zhang J-Z, Pu X-M, Kang X-J. Bowen's disease on the palm: A case report. World J Clin Cases 2019;7(18):2910–5.