compared with the sister. Further literature reports should be encouraged as they would support a genetic predisposition for this rare condition.

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Influence of the work environment on the development of contact dermatitis: a retrospective study with 1515 patients from Spain

Dear Editor,

It is estimated that up to 20% of the general population is at risk of developing contact dermatitis (CD) throughout their lives.[1] CD causes morbidity, sometimes becoming a chronic process that can even lead to disability and abandonment of the job, associated with significant socioeconomic costs.[2] Occupational skin diseases are common. In Spain, occupational skin diseases correspond to 7.9% of all occupational diseases and within these, occupational CD (OCD) is the most frequent.

This is a retrospective epidemiological study carried out in the Contact Dermatitis Unit of a tertiary hospital in Spain in the period 2000–2011. The primary objective of this study is to contribute to a better epidemiological understanding of CD in order to propose preventive measures, using data from a cohort of more than 1000 patients. In addition, this report aims to describe the characteristics of the population depending on whether they develop their work activity in a wet or dry environment and their influence on the development of OCD.

A total of 1515 patients were analyzed, 61.45% women and 38.55% men, average age 42.4 years. The predominant location of the lesions was the hands (61.1%). Most of the patients presented only one location of CD (79.8%) (Table 1). By activity sectors, the cleaning sector is the one that comprises the highest percentage of the sample (25.2%). Almost half of the patients analyzed develop their work activity in a humid environment. Two hundred and ninety-nine cases were diagnosed as OCD, of which 164 developed their activity in a humid environment (Table 2).

Appendix 1 shows a detailed analysis of the statistically significant relationships found in our study. A significant association was found between sex and the environment in which the profession is developed. Women tend to work more in humid environments and men in dry environments ($P < 0.001$). No significant relationship was found between the location of CD and the environment where the profession is developed ($P = 0.613$).

A significant higher incidence of metal intolerance was detected in wet professions ($P < 0.001$). However, this connection found in our study should be interpreted with caution, as women are more likely to work in wet work professions. It is known from the literature that women are more frequently sensitized to metal because of the use of metal jewelry, which could be the cause of the observed association between wet work and metal sensitization. Likewise, a significant relationship was observed between the results of the patch tests and the professional environment where they work. A patient with a profession in a humid environment has a greater risk of presenting a

Table 1 Baseline characteristics of the subjects included in the study ($n = 1515$)

Age (mean)	42.4 years
Gender	
Male	584 (38.5%)
Female	931 (61.5%)
Location of contact dermatitis	
Face (perioral)	171 (11.3%)
Eyelids	114 (7.53%)
Hands	924 (61.07%)
Legs	122 (8.06%)
Perianal	18 (1.19%)
Other	164 (10.84%)
Previous metal intolerance	
Yes	1025 (67.7%)
No	489 (32.3%)
Other dermatosis	
None	1232 (81.3%)
Psoriasis	176 (11.6%)
Atopic dermatitis	94 (6.2%)
Dyshidrotic eczema	12 (0.8%)
Patch tests	
Positive to any allergen	916 (60.5%)
Negative	599 (39.5%)

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Table 2 Characteristics of the work environment of the patients included in the study (n = 1515)

	N	%
Professions		
Humid work environment	754	49.8%
Dry work environment	761	50.2%
Occupational contact dermatitis		
Yes	299	19.7%
No	1216	80.3%
List of occupations		
Farming	27	1.8%
Construction	128	8.4%
Catering	90	5.9%
Cleaning	382	25.2%
Health	40	2.6%
Education	45	3.0%
Hairdressing	46	3.0%
Industry	22	1.5%
Office	267	17.6%
Retiree	57	3.8%
Textile	19	1.3%
Transport	21	1.4%
Commerce	69	4.6%
Others	302	19.9%

positive result in the patch tests compared to a patient with a profession where humidity does not intervene ($P < 0.001$). In addition, a significant relationship was detected between the professions in humid environments and the positive result in the patch tests for the allergen nickel sulfate ($P = 0.001$) and p-phenylenediamine ($P = 0.012$), and between professions in dry environments and a positive result for fragrance mix ($P = 0.033$). Appendix 2 shows frequencies of positivity and negativity of the entire sample and also separated by work environment to the different allergens studied in the patch tests. Lastly, the relationship between the occupational environment (wet or dry) and the risk of OCD was analyzed. A weak association was found between OCD and wet professions ($P = 0.05$).

Despite the fact that wet work is considered a risk factor for the development of CD,[3] most countries do not have regulations on the exposure of skin to wet environments in the workplace. Numerous studies, including ours, support the relationship between the work environment with humidity and the development of CD.[4,5] Information such as that contained in this article should serve as a basis to promote the development of regulatory measures on risk professions in Spain.

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1. Appendix

Detailed analysis of the statistically significant relationships found in our study.

1. Relationship between work environment and sex.

	Humid work	Dry work	*P* value
Women	511 (54.9%)	420 (45.1%)	<0.001
Men	243 (41.6%)	341 (58.4%)	

Risk estimation: OR 1.70, CI 95% (1.38–2.10).

2. Relationship between work environment and prior metal intolerance.

	Metal intolerance	No metal intolerance	*P* value
Humid work	303 (40.2%)	451 (59.8%)	<0.001
Dry work	186 (24.5%)	574 (75.5%)	

Risk estimation: OR 2.07, 95% CI (1.66–2.58).

3. Relationship between work environment and positivity or negativity to patch tests.

	Negative patch tests	Positive patch tests to any allergen	*P* value
Humid work	261 (34.6%)	493 (65.4%)	<0.001
Dry work	338 (44.4%)	423 (55.6%)	

Risk estimation: OR 1.5, 95% CI (1.22–1.85).

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4. Relationship between work environment and positivity or negativity to the allergens included in the patch tests.

a) Nickel sulfate.

	Negative patch test	Clinically relevant positive patch test	*P* value
Humid work	449 (59.5%)	305 (40.5%)	0.001
Dry work	516 (67.8%)	245 (32.2%)	

Risk estimation: OR 1.43, CI 95% (1.15–1.76).

b) Fragrance mix.

	Negative patch test	Clinically relevant positive patch test	*P* value
Humid work	726 (96.3%)	28 (3.7%)	0.033
Dry work	714 (93.8%)	47 (6.2%)	

Risk estimation: OR 1.7, CI 95% (1.05–2.76).

c) P-phenylenediamine.

	Negative patch test	Clinically relevant positive patch test	*P* value
Humid work	718 (95.2%)	36 (4.8%)	0.012
Dry work	743 (97.6%)	18 (2.4%)	

Risk estimation: OR 2.07, 95% CI (1.16–3.67)

5. Relationship between work environment and occupational contact dermatitis (OCD).

	Humid work	Dry work	*P* value
No OCD	590 (78.3%)	626 (82.3%)	0.05
OCD	164 (21.7%)	135 (17.7%)	

Risk estimation: OR 1.28, 95% CI (1–1.66).

2. Appendix

Frequencies of positivity and negativity of the entire sample and also separated by work environment to the different allergens studied in the epicutaneous tests.

	Totals that tested negative		Totals that tested positive		Humid environment that tested negative		Humid environment that tested positive		Dry environment that tested negative		Dry environment that tested positive	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Nickel sulphate	965	63.7%	550	36.3%	449	59.5%	305	40.5%	516	67.8%	245	32.2%
Wool alcohols	1.506	99.4%	9	0.6%	747	99.1%	7	0.9%	759	99.7%	2	0.3%
Neomycin sulfate	1.500	99.0%	15	1.0%	743	98.5%	11	1.5%	757	99.5%	4	0.5%
Potassium dichromate	1.393	91.9%	122	8.1%	684	90.7%	70	9.3%	709	93.2%	52	6.8%
Caine mix	1.493	98.5%	22	1.5%	744	98.7%	10	1.3%	749	98.4%	12	1.6%
Fragance mix	1.440	95.0%	75	5.0%	726	96.3%	28	3.7%	714	93.8%	47	6.2%
Colophony	1.491	98.4%	24	1.6%	739	98.0%	15	2.0%	752	98.8%	9	1.2%
Epoxy resin	1.494	98.6%	21	1.4%	743	98.5%	11	1.5%	751	98.7%	10	1.3%
Quinoline mix	1.511	99.7%	4	0.3%	752	99.7%	2	0.3%	759	99.7%	2	0.3%
Balsam of Peru	1.476	97.4%	39	2.6%	734	97.3%	20	2.7%	742	97.5%	19	2.5%
Ethiylenediamine dihydrochloride	1.501	99.1%	14	0.9%	749	99.3%	5	0.7%	752	98.8%	9	1.2%
Cobalt dichloride	1.399	92.3%	116	7.7%	691	91.6%	63	8.4%	708	93.0%	53	7.0%
P-tert butylphenol formaldehyde resin	1.479	97.6%	36	2.4%	735	97.5%	19	2.5%	744	97.8%	17	2.2%
Paraben mix	1.505	99.3%	10	0.7%	750	99.5%	4	0.5%	755	99.2%	6	0.8%
Carba mix	1.481	97.8%	34	2.2%	735	97.5%	19	2.5%	746	98.0%	15	2.0%
Black rubber mix	1.498	98.9%	17	1..1%	745	98.8%	9	1.2%	753	98.9%	8	1.1%
Methylchloroisothiazolinone/ Methylisothiazolinone	1.397	92.2%	118	7.8%	695	92.2%	59	7.8%	702	92.2%	59	7.8%
Quaternium 15	1.487	98.2%	28	1.8%	746	98.9%	8	1.1%	741	97.4%	20	2.6%
Mercaptobenzothiazole	1.513	99.9%	2	0.1%	753	99.9%	1	0.1%	760	99.9%	1	0.1%
P-phenylenediamine	1.461	96.4%	54	3.6%	718	95.2%	36	4.8%	743	97.6%	18	2.4%
Formaldehyde	1.486	98.1%	29	1.9%	742	98.4%	12	1.6%	744	97.8%	17	2.2%
Mercapto mix	1.510	99.7%	5	0.3%	752	99.7%	2	0.3%	758	99.6%	3	0.4%

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1 **Continued**

	Totals that tested negative		Totals that tested positive		Humid environment that tested negative		Humid environment that tested positive		Dry environment that tested negative		Dry environment that tested positive	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Thiomersal	1.445	95.4%	70	4.6%	713	94.6%	41	5.4%	732	96.2%	29	3.8%
Thiuram mix	1.492	98.5%	23	1.5%	741	98.3%	13	1.7%	751	98.7%	10	1.3%
Diazolidinyl urea (germall ii)	1.506	99.4%	9	0.6%	748	99.2%	6	0.8%	758	99.6%	3	0.4%
Imidazolidinyl urea (germall 115)	1.509	99.6%	6	0.4%	750	99.5%	4	0.5%	759	99.7%	2	0.3%
Budesonide	1.496	98.7%	19	1.3%	744	98.7%	10	1.3%	752	98.8%	9	1.2%
Tixocortol-21-pivalate	1.502	99.1%	13	0.9%	748	99.2%	6	0.8%	754	99.1%	7	0.9%
Hydrocortisone-17-butyrate	1.497	98.8%	18	1.2%	745	98.8%	9	1.2%	752	98.8%	9	1.2%

Successful use of intravenous and intralesional rituximab in paraneoplastic pemphigus with Castleman's disease

Dear Editor,

Paraneoplastic pemphigus (PNP) is a rare and difficult-to-treat condition with few reports in the literature. A fortuitous discovery led to use of rituximab in PNP.[1] We report the successful use of intravenous and intralesional rituximab in PNP with Castleman's disease (CD).

A 41-year-old female presented with painful erosions in the oral cavity, lips, and vulva present for 18 months. There was no history of fluid-filled lesions or prior drug intake. She did not have systemic complaints. Cutaneous examination revealed erosions with hemorrhagic crusts on lips, extensive erosions on buccal mucosa, palate, gingiva, and vulva (Fig 1a, b). Few lichenoid papules were seen over axillae and fingers. She was treated as recalcitrant oral lichen planus with multiple immunosuppressants (prednisolone, dapsone, azathioprine, methotrexate, cyclosporine, and hydroxychloroquine) over the past 1 year with minimal relief. Detailed work-up was performed considering a provisional diagnosis of PNP. Biopsy from oral mucosa revealed ulcerated epidermis with plasma–lymphocytic infiltrate whereas lichenoid papule revealed basal vacuolar degeneration and band-like dermal lymphocytic infiltrate. Intercellular staining with IgG/C3 was noted on direct immunofluorescence from perilesional mucosal biopsy. Routine serological examination was normal. Enzyme-linked immunoassay for desmoglein (Dsg) levels showed Dsg 3 values >200

Figure 1 Recalcitrant mucosal lesions. Pretreatment: erosions covered with hemorrhagic crusts on the lips with gingival erosions (a) and palatal erosions (b). Posttreatment: healed erosions over the lips (c) and hard palate after 3 weeks of intralesional rituximab (d)

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