

Palmar Eczema: A Pathogenetic Role for Acetylsalicylic Acid, Contraceptives and Smoking?

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A statistical study of the relationship between vesicular palmar eczema and various clinical variables was carried out. Vesicular palmar eczema was found in 153 cases (38%), thereof 113 females (76%). Ninety-two percent of all found cases could be regarded as pompholyx. Three new pathogenetic factors were suggested in the vesicular palmar eczema: use of acetylsalicylic acid (Aspirin®), contraceptives and smoking. Furthermore, the relationship between pompholyx and contact allergy to nickel was confirmed. No correlation to atopy was found. However, both atopy and sex were found to constitute certain risk factors. The study was based on information from 425 consecutively patch tested patients (74% females) from our local database DALUK. *Key words:* Hand eczema; Pompholyx; Systemic drugs; Contact Dermatitis; Atopy. (Received January 21, 1988.)

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Pompholyx (vesiculosis, dyshidrosis) is a common type of hand dermatitis. In one study, pompholyx was found in about 20% of all cases of hand eczema (1). The pathogenesis of pompholyx is still obscure, although a hereditary predisposition may exist (2). The view that the sweat glands play a role is virtually abandoned today (3, 4). There are, however, at least three suggested factors causing pompholyx:

- I. the secondary eruption associated with contact allergy to nickel (5-7), cobalt (8), chromate (9), neomycin (10) and balsam of Peru (11, 12);
- II. atopy (2, 13);
- III. an active dermatophytosis elsewhere on the body, usually on the feet (14-16).

Also psychosomatic causes (17), stress (18) as well as type I immunologic causes (8) are said to be correlated to pompholyx.

The purposes of the present study were twofold: to further investigate two of the causes mentioned before (I, II), and to elucidate whether relationships exist between vesicular palmar eczema (pompholyx in particular), smoking and the use of acetylsalicylic acid and contraceptives. For this purpose, information about patch-tested patients from our database DALUK (19) has been used.

MATERIAL AND METHODS

During a 9-month period in 1986-87 the following information about 425 consecutively patch-tested patients was recorded at the time of application of the patch tests:

Age and sex

Atopy, defined as:

- a) personal history of present or previous allergic rhinitis or asthma, or
- b) present or previous atopic eczema

Smoking habits

Vesicular palmar eczema (VPE), defined as eczematous vesicles symmetrically on the volar aspects of hands and/or fingers, sometimes on the sides of fingers as well. Eczema elsewhere in addition was permitted.

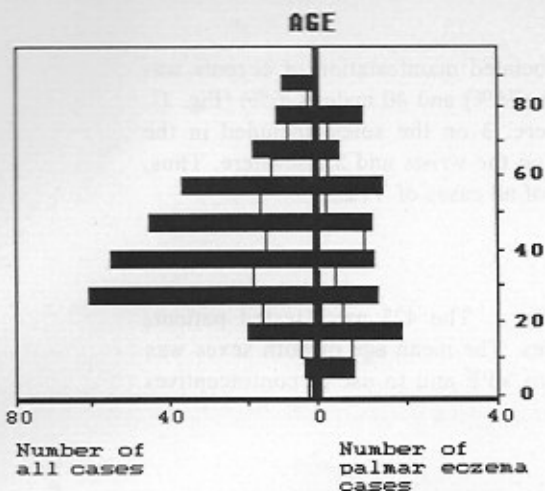


Fig. 1. Sex and age distribution in 425 consecutively patch-tested patients. ■, Females; □, Males.

Pompholyx, defined as eczematous vesicles symmetrically on the volar aspects of hands and/or fingers, sometimes on the sides of fingers as well. Eczema elsewhere in addition was *not* permitted.

Systemic drugs. This enquiry (as the final question) specified that the drug must have been taken at least once a week or regularly each month during the disease period. The reported drugs were classified in groups, e.g. diuretics, contraceptives etc., except for analgesics which were divided into acetylsalicylic acid, paracetamol and other analgesics.

Patch test results, recorded as described earlier (19).

The epidemiologic situation in Malmö and the patch test procedure have been described earlier (19). The indications for patch testing have been a suspicion of contact allergy and/or cases of different types of dermatitis in which a contributing contact allergy could not be ruled out.

Statistics

Fisher's exact test and the χ^2 -test were carried out by the Statistical Treatment and Analysis software (Statistical software package developed by the author, compatible with Luxor and IBM PC) in order to statistically analyse the correlations between VPE and usage of ASA and contraceptives, smoking and contact allergy to nickel, cobalt, chromate, neomycin and balsam of Peru. Odds Ratio (OR) was applied to test the strength in the correlations observed. The Mantel-Haensel test was performed in order to detect any confounding factors such as age and sex. The 95% level of significance was used in all tests.

Table I. The most frequent contact allergens in 425 consecutively patch-tested patients

Allergen	Number	%
Nickel	81	19.0
Fragrance mix	25	5.9
Colophony	20	4.7
Cobalt	17	4.0
Neomycin	13	3.0
Balsam of Peru	13	3.0
Amerchol L 101	12	2.8
Chromate	10	2.3
Ethylenediamine	10	2.3
Kathon CG	10	2.3

RESULTS

Vesicular palmar eczema (VPE) as solitary or associated manifestation of eczema was found in 153 cases (38%), consisting of 113 females (74%) and 40 males (26%) (Fig. 1). Among these 153 patients 15 had eczema elsewhere: 3 on the soles (included in the pompholyx cases), 2 on the legs, 3 on the arms, 4 on the wrists and 3 elsewhere. Thus, pompholyx was found in 141 cases (33%) i.e. 92% of all cases of VPE.

Sex and age

The sex and age distributions are described in Fig. 1. The 425 patch-tested patients consisted of 313 (74%) females and 112 (26%) males. The mean age of both sexes was found to be 45 ± 20 (SD). Low age was correlated to VPE and to use of contraceptives ($p < 0.05$).

Atopy

No correlation was found between atopy and VPE. Atopy among the 425 patients was distributed as:

i) Anamnesis of present or previous asthma or rhinitis:	91 (21.4%)
ii) Atopic eczema	64 (15.0%)
iii) i) and/or ii)	128 (30.1%)

Smoking

It was found that a relationship exists between VPE and smoking (Table II). The correlation was observed mainly in males and a special risk group are the non-atopic males. Smoking was correlated to low age ($p < 0.05$)—but not to sex.

Patch test results

Contact allergy to nickel was found in 81 (73 females) of the 425 patch-tested patients (19.0%), neomycin in 13 patients (3.0%) and balsam of Peru in 13 patients (3.0%) (Table I). VPE was found to be positively correlated only to contact allergy to nickel in females (Table II).

Table II. Significant correlations between vesicular palmar eczema and ASA, smoking, nickel allergy and contraceptives

p-values refer to Fisher's exact test. ASA = acetylsalicylic acid, OR = Odds Ratio (with $p < 0.05$)

	Smokers (males)			ASA (atopic females)			Contraceptives (females)			ASA			Nickel (females)		
	Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
Yes	21	17	38	13	8	21	20	93	113	27	126	153	36	77	113
No	24	46	70	27	49	76	19	181	200	24	248	271	37	163	200
Total	45	63	108	40	57	97	39	274	313	51	374	425	73	240	313
	<i>p</i> =0.029			<i>p</i> =0.028			<i>p</i> =0.028			<i>p</i> =0.006			<i>p</i> =0.006		
	OR=2.4			OR=2.9			OR=2.1			OR=2.2			OR=2.1		

Systemic drugs

Thirty-one different groups of systemic drugs were registered. The 10 most frequent drugs/groups are listed in Table III. The most frequent drugs/groups were found to be ASA (acetylsalicylic acid) (15%), paracetamol (13%) and contraceptives (12%).

Significant positive correlations, also described in Table II, were found between VPE and the use of:

- i) acetylsalicylic acid (exposed groups: males and atopic females)
- ii) contraceptives (exposed group: atopic females)

No correlations were found between ASA and contraceptives. Reasons for taking ASA were: headache, menstrual pain, for prevention of heart failure and as sedatives.

DISCUSSION

The reason that brought about this study was to find out whether there exists a relationship between VPE (vesicular palmar eczema) and use of contraceptives and ASA (acetylsalicylic acid), smoking, as well as to contact allergy to nickel, cobalt, chromate, neomycin and balsam of Peru. Because the majority (92%) of all cases of VPE could be regarded as pompholyx, this discussion could be valid for pompholyx as well.

VPE was found to be positively correlated to the use of two different drug groups: contraceptives and analgesics, here represented by acetylsalicylic acid (ASA). The positive correlation between the use of contraceptives and VPE has not been reported earlier. However, a suspected case of correlation between contraceptives and pompholyx has recently been observed in our division of occupational dermatology (Björkner, personal communication). Furthermore, another hormone has been reported to induce pompholyx by an auto-immunologic reaction: progesterone (21, 22).

The correlation between VPE or pompholyx and the use of ASA, also not reported before, is of great interest due to the high usage frequency of ASA. ASA is known to provoke a variety of skin reactions including urticaria, angioneurotic edema, purpura and pustular psoriasis (23). ASA is known also to provoke a non-specific type reaction of urticaria (24-26) and the same might be considered for VPE and pompholyx. As a matter of fact, it increases the wheal of a histamine intracutaneous skin test in asthmatics (27).

The correlation between VPE and smoking has never been reported before. It has, however, been discussed for the pathogenesis of pustulosis (20), another chronic palmo-plantar disease.

Table III. *The most frequent systemic drugs used by 425 consecutively patch-tested patients*

Rank	Drug/group	Number	%
1	Acetylsalicylic acid	51	15
2	Paracetamol	42	13
3	Contraceptive drugs	39	12
4	Diuretics	33	10
5	Hypnosedatives	26	8
6	Drugs for heart rhythm disorders	20	6
7	Drugs for heart failures	18	5
8	Antihypertensive drugs	18	5
9	Antirheumatic drugs	13	4
10	Antihistamines	10	3

It was confirmed that vesicular palmar eczema (VPE) is correlated to nickel contact allergy (5-7). No correlations were found between VPE and balsam of Peru, neomycin, cobalt or chromate, although such have been found by others (8-12). This may be due to the small numbers of patients allergic to these substances. Nor could any relationship between VPE and atopy be demonstrated as has been suggested by other authors concerning pompholyx (2, 13). A possible explanation for this could be that different definitions of atopy and/or various selection criteria have been used. Furthermore, VPE was found to be correlated to low age, i.e. predominating in the age group 20-40 years which is at variance with an earlier study (2).

Summarizing the provoking effect of ASA, contraceptives, smoking, and contact allergy to nickel, these factors may account for about 80% of all the cases of VPE in this study. Finally, it would be of great interest to carry out case-control studies on patients in which the different variables of VPE and pompholyx are controlled.

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