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PRURIGO BESNIER (ATOPIC DERMATITIS) WITH SPECIAL REFERENCE TO THE ROLE OF ALLERGIC FACTORS

II. The evaluation of the results of skin reactions

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In a previous communication data of in-patients with Prurigo Besnier (PB) at the Dermatologic Clinic, Karolinska Sjukhuset between 1953 and 1958 were presented in five age groups: I, 0—6, II, 7—12, III, 13—18, IV, 19—45 and V, over 45 years of age. According to the investigations hereditary factors seemed to exert little influence on the onset and course of the disease or on the skin and vasofunctional tests (73).

In the present communication the author considers the following:

Part I: The evaluation of the results of immediate skin reactions. Thrombocyte test in children with nutritional allergy.

Part II: Epicutaneous tests in patients with Prurigo Besnier (PB). In his considerations the author takes into account (i) the occurrence of manifestations of respiratory allergy (only cases without such combinations being defined as PB) and (ii) the age of the patients.

Part I

Immediate skin reactions on patients with PB. Thrombocyte tests in children with food allergy

Many data exist of results of intracutaneous (i. c.) and scratch tests in patient material of different numbers and composition. The present communication does therefore not contain a complete review of this topic and only PB-material exceeding 100 patients, performed with different allergens, are taken into consideration in the following grouping from the literature:

	Number of patients with PB	Positive immediate skin reactions
Adults		
Alexander (2)	11.443	52.7 % (compilation of 44 USA authors)
Brunsting (14)	100	70 %
Norrlind (65)	100	78 %
Hellerström & Lidman (34)	311	90 % (incl. patch tests)

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	Number of patients with PB	Positive immediate skin reactions
Schnyder (91)	136	57 %
Oddoze (66)	117	69.2 % (excl. molds, bacteriae)
Q. van Ufford (72)	100	81 %
Children (Eczema infantile)		
O'Keefe & Rackeman (67)	239	52 %
Epstein & Palacek (22)	231	75 %
Kesten (47)	2.000	75 % (about 1/4 of the patients are over 6 years)
Meara (55)	112	65 %
Ratner (75)	114	97 %

The following is a brief group survey of the allergens used:

1. *Inhalants*

Since Rost (78) many authors have confirmed the influence of inhalants on PB. This is based on the case history, on immediate skin tests and on transfer reactions, as well as on the relationship between the air contents of the inhalant and the intensity of the disease and on presumed successful hypersensitization. There is a noticeable difference between patients with PB and with PB plus respiratory manifestations. Schnyder (83) found an incidence of 19 % and 63—79 % respectively. The clinical value of skin reactions in connection with inhalants is, according to Sulzberger (97), only indicative of an allergic predisposition.

(a) *Animal hair*

Domestic animal hair is a well-known allergen. Brunsting (14) obtained positive immediate skin reactions against animal epithelium in 20 % of the patients with PB. Epstein & Palacek (22) found many positive reactions against animal hair in farmer children. Bonnevie (12) described incongruities between skin tests and exposure tests in 24 patients with PB. Similarly Nexmand (59, 60) attributes no considerable etiologic importance to skin tests in this field. The clinical evidence of greatest significance was found in connection with horse dander. Of 10 patients with PB showing strong reactions to animal hair only 6 had a case history related to these allergens. However the provocation read on the skin after exposure was positive in 8 cases (Nilzén, 64). Osborne & Murray (70) believe that sensitivity to inhaled wool is of importance in PB cases.

(b) *Molds*

The role of molds in various allergic manifestations is well-known since the studies of Storm van Leuwen (51). Blumstein (11) has pointed to the divergency of the skin tests carried out with different methods. These diver-

gencies are mainly due to climatic and geographic differences. Several authors have elaborated the part played in PB by the mold allergen (100, 44, 25). The results of skin tests with molds vary in PB; thus Kesten (47) ascribes 10 per cent of the positive skin tests to molds, whereas Hellerström & Lidman (34) found 20 per cent. Certain authors emphasize the importance of the delayed i. c. mold reactions (for example 44).

Nexmand (59) found only few correlations between damp living conditions and mold-positivity but assumes that the real relationship is higher. Many patients with PB improve in dry environments, but this may also be due to lower humidity of the air. The frequency of positive reactions to molds was, however, approximately the same in patients living under such damp conditions as in patients living in dry houses.

Several authors have presented the seasonal and topographic changes of mold contents in the air in the U. S. A. (24, 44, 101). Feinberg (24, 25) emphasizes that the mold spores are found almost everywhere in the air, so that no special circumstances are needed for evoking mold allergy. Nilsby (61) surveys their occurrence in Sweden in connection with asthma and rhinitis. The order of frequency in a material from Central Sweden is the following: botrytis — mucor — hormodendron — penicillium. As a rule sensitization is bound to species however the standard extracts used were made according to genus.

(c) *House-dust*

The role of the house-dust allergen-conglomerate consisting of fungi, pollen, wool, cotton, feathers, human hair, animal hair, food particles, insect dust etc. has been known for a long time also in PB. However, Sulzberger (93) points out very correctly that it may also be a primary irritant. In some of Nexmand's (59) house-dust positive cases the asthma and itching showed a parallelism in patients with asthma and PB. However, there exists a considerable incongruity between the results of house-dust skin tests and the effect of environmental changes or changes in working conditions in PB. In the cases of asthma of Arner *et al.* (5) the reactions to dust and to animal hair showed a clear parallelism. Lobitz & Jillson (52) point to the importance of delayed i. c. reactions in house-dust allergy. According to Wodehouse (104), dust extracts contain one major and several minor allergens which in many cases are specific for each extract. Recently, it has been stated that polysaccharide-extract made of house-dust showed positive skin reactions in 31 out of 34 and in 70 out of 76 cases of PB and that might perhaps be put to diagnostic use (57).

(d) *Pollens*

Positive immediate skin reactions to watersoluble pollen extracts occur even in PB-patients. Thus Nexmand (59) has found grass pollen positivity in 25 out of 100 patients, 15 of which showed seasonal exacerbation. Excluding cases combined with rhinitis or light sensitivity this gives a ratio of 15:6. Hellerström & Lidman (34) observed pollen positivity in 21 per cent in patients with PB. When analyzing 10 PB-cases which deteriorated in spring and summer, these showed pollen sensitivity; in 7 of them even respiratory manifestations were found. The series presented by Tuft & Heck (99) showed a positivity of

89 per cent to ragweed pollen, 57 of these having respiratory manifestations. At the same time, 52 per cent reacted to timothy grass in skin tests. Pollen inhalation can evoke respiratory symptoms in patients with PB, but according to Schnyder (84) this does not influence the skin symptoms. Nilzén (64) demonstrated that out of 8 PB-patients, strongly positive to pollens, the provocation read on the skin after exposure was positive only in half the number of patients. Six patients had a case history of pollen.

2. *Foods*

The occurrence of food allergy in patients with PB is extremely varying. This can mainly be explained by the differences in the patient material, by the use of different test extracts and by various regional eating habits. In spite of the fact that the skin reaction to egg albumen is based on sensitivity (43), this reaction is considered to play only an indicative role in infantile eczema as it occurs in 100 per cent during the first three months, in 85—87 per cent during the first year and in 49 per cent between the first and second year of age (22). Thus, most authors do not include this reaction in their statistics. The most important statistics on foodstuffs in large series of patients with PB include:

	Number of PB-patients		Positive of immediate skin reactions
Adults			
Balyeat (8)	181		66 %
Hopkins & Kesten (41)	400		75 %
Brunsting (14)	100		40 %
Nexmand (59)	100		29 %
Kesten (47)	2000	adults	35 %
		children	65 %
Children			
Hill (37)	300		59 %
Rowe & Rowe (80)	100		44 %
Lehmus & Roine (50)	1075		86 %*

* = only 50 per cent of the patients were PB, the remaining being cases of asthma and rhinitis.

In the investigations of Hellerström & Lidman (34) 38.3 % of the positive skin reactions are due to foods whilst Norrlind (65) indicates only 10 per cent.

The immediate skin reactions with foods could be compared to exposure tests (ingestion) but the latter depend on several factors and can be negative in spite of existing sensitivity (77, 74). Further, the clinical sensitivity to foods often ceases while the immediate skin reaction is still positive. Freedman & Sellars (28) establish the age of their patients with asthma plus PB, where the clinical sensitivity is lost to food to which the patients reacted earlier. Rarely, one could show isolated sensitivity of the oral mucosa and of the digestive tract which could not be demonstrated by immediate skin tests. Due to the important incongruity between skin and exposure tests to foods many authors do not accept

the importance of such skin tests in PB, or infantile eczema (16, 42). Others support the view that the food allergy in PB-patients is independent of PB (28). The relationship between proved food sensitivity and the results of i. c. tests can be different for certain foods (28). It is quite natural that commercial food tests extracts are not quite reliable for testing, and some authors prefer to test with raw materials (4, 28). According to O'Leary (68) the importance of food elimination is small in PB, but itching may increase after food exposure. Various disturbances of the digestive tract have been shown in patients with PB (36, 69).

Several investigators have studied the allergenic role of some foodstuffs. The chief food offenders in children with PB are egg (38, 13) and milk. In the case of milk, lactalbumine is the principal allergen (30), whereas in the case of chocolate they are the cacao butter and the cacao bean (46, 106). Cross reactions between foodstuffs belonging to the same biologic group are often mentioned, for example between egg and chicken and between cereals. Cross reactions between foods and animal hair are known, as well as between milk and cow hair (56, 81). Contaminations may also produce allergic reactions (74).

The manifestations of food allergy can elicit various symptoms as they affect different parts of the digestive tract. Thus even nausea and refusal to eat certain foods can be signs of food allergy in childhood (56). So far, our diagnostic methods are not adequate to establish a given sensitivity to foods. The diagnostic procedures consist of different diet trials, various modifications of the ingestion test, eosinophilia in the stools, the leukopenic index etc. (for literature references and a review of these problems see for example 103). Some new diagnostic x-ray technics (98, 105, 29) can be valuable, but are not suitable for routine use. Finally, the thrombocyte test is also used as an aid in the diagnosis of food allergy (90, 62). Nilzén (63) found positive thrombocyte tests in 4 out of 6 patients with PB strongly positive to foods in i. c. tests.

3. *Bacterial extracts*

Bacterial allergens are generally employed in PB skin testing, since the studies of Norrlind (65). In certain cases clinical flare-up can be followed in connection with bacterial infections. In most cases, it is difficult to evaluate in PB the significance of immediate positive reactions due to, for example, stafylococcic extracts.

Evaluation of the immediate skin reactions

The evaluation of skin reactions is one of the most difficult problems in PB.

In a narrow sense, pseudopositive reactions may occur since many positive reactions are found in control groups. Thus the incidence of 2—3 per cent is mentioned (10), or not one in 43 children (55), while others indicate as much as 50 per cent when evaluation is evidently very doubtful. According to Haxthausen (33) many positive reactions can be observed also in "normal" children. Unspecific polyvalent hypersensitivity exists in acute forms of hay fever and urticaria (54). On the other hand, it may be possible that the negative reaction is pseudonegative, as there is no erythema when testing (see also the vasofunctional studies in the author's first communication, 73). In such cases the possible sensitivity can only be discovered by means of Prausnitz-Küstner

transfers and repeated i. c. tests. However, according to the investigations of Ratner (76) the Prausnitz-Küstner transfer reaction may also have several sources of error. When testing repeatedly within a period of two months Meara (55) found agreement in 85 per cent of the cases.

In a broader sense the following objections are raised against the positive immediate skin reactions (84):

1. They are not adequate reflecting the skin lesions of PB.
2. Even by means of different exposure techniques no typical PB-lesions can be elicited with inhalants or foods.
3. The allergen elimination carried out on the basis of positive skin tests is generally not followed by a rapid or definite improvement.
4. Only urtica can be produced by passive transfer but no prurigo-lesions.
5. No lasting results can be obtained by hyposensitization based on statistical evaluation.

On the other hand, it has to be mentioned that:

ad 1: According to Haxthausen (33) itching is the primary symptom, the lichenified plaques are only secondary symptoms: on this basis the relationship between skin test and exposure deserves more consideration.

ad 2: Asthma, rhinitis or anaphylactic shock can be provoked even in PB-patients by inhalatory or peroral allergens; itching and flare-up of the skin after inhalation, provocation or exposure (Nilzén, 64) or after overtreatment during hyposensitization (92) can sometimes be observed; an increased activity of the skin following routine i. c. tests occurs seldom, however, according to the author's observations.

ad 3: Possibly some of the positive skin reactions may have real etiologic significance while others may refer to non-manifest allergy.

The opinion of Hill (39) is worth mentioning that a normal individual reacts in the same way as the atopic one from an immunological point of view, but not so intensely or for such a long time and only to stronger stimuli. Furthermore, the normal individual does not get clinical symptoms.

Nilzén's (64) criteria to discover the clinical significance of the wheal reaction in PB are: (1) case history, (2) intracutaneous or scratch tests with reliable biologically standardized extracts, (3) provocation or exposure tests read on the skin, (4) elimination-observation and finally (5) specific anti-allergic treatment-observation.

In connection with the evaluation of positive immediate skin reactions in patients with PB there are many sceptical opinions. Some authors only attribute a "trigger" role to the allergic mechanism. Yet the problem is far from solved, and a few interesting observations may be mentioned in this connection:

(i) A local eczema-plaque developed at the site of the injection in an asthma patient after long-lasting dust hyposensitization (17),

(ii) In individuals with positive immediate skin reactions to protein allergen when applied percutaneously, subcutaneously or intranasally the contact dermatitis of different etiology flared up. The cause of the contact dermatitis was sensitization to rhus antigens. Five out of these 8 patients had asthma and one had hay fever, but none of them had PB (93).

(iii) Typical spongiosis occurred on the site of a previously given NaCl injection after injection in an atopic person of mold extract and ambotoxin (52).

Table 1. *List of allergens used in this study.*

Series I

1. Coca's solution, as control
2. Histamin 1 : 10,000
3. Horse hair
4. Cat hair
5. Dog hair
6. Cow hair
7. Hen's feather
8. Wool
9. Textile dust (chiefly wool)
10. Cottonseed
11. Hay
12. Straw

Series II

1. House-dust
2. Alternaria extract
3. Aspergillus extract
4. Trichothecium extract
5. Monilia albicans extract
6. Mold mixed extract: botrytis + hormodendron + mucor + penicillium species
7. Baking yeast
8. Brewery yeast
9. Staphylococcal toxoid, purified 1/10 (Sw. Stat. Bakt. Lab.)
10. Staphylococcus vaccine 1/10 (Sw. Stat. Bakt. Lab. polyvalent, about 300 millions organisms/ml)
11. Anti-catarrh vaccine 1/10 (Parke-Davis)
12. Mixed vaccin for bronchial asthma 1/10 (Parke-Davis)

Series III

1. Hazelnut
2. Wheat
3. Rye
4. Oat
5. Barley
6. Corn
7. Milk, unheated
8. Milk, heated
9. Egg albumin, unheated
10. Egg albumin, heated
11. Egg yolk unheated
12. Egg yolk heated

Series IV

1. Birch pollen
2. Tree pollen mixed extract: birch, hazel, oak, alder
3. Timothy grass
4. Dog-daisy (chrysanthemum leucanthemum)
5. Lycopodium
6. Cacao
7. Fish mixed extract: perch, pike, codfish, baltic herring
8. Meat: mixed extract: calf, cattle, chicken, pork, sheep
9. Shellfish mixed extract: lobster, shrimps, crowfish
10. Spices: mixed extract of white and Jamaica pepper
11. Fruits mixed extract: orange, apples, plums, banana
12. Vegetables, mixed extract: tomato, carrots, spinach, peas, beans

Others: Dust extracts.

Pollen series

1. Hazel
2. Oak
3. Alder
4. Juniper
5. Pine
6. Spruce
7. Reed
8. Sallow
9. Asp
10. Dandelion
11. Elm
12. Wheat

Finally, it should be mentioned that in cases of PB combined with respiratory allergic manifestations, many more positive skin reactions are seen than in uncombined PB-cases.

The author's investigations

Methods. Table 1 gives the list of allergens with which all patients have been tested. The biologically standardized solutions manufactured by Vitrum Laboratories, Sweden had a concentration of 1 : 1000. The data on the bacterial

Table 2 a. *Results of immediate skin tests in 1200 patients with Prurigo Besnier.*
923: 77 % positive in intracutaneous tests 277: 23 % negative in intracutaneous tests

	Series I		Series II		Foods[1]		Egg		Pollen		Negative		
	No. of pos. reactions	%	No. of pos. reactions	%	No. of pos. reactions	%	No. of pos. reactions	%	No. of pos. reactions	%	No. of reactions	%	
Prurigo Besnier													
Group[3] I: 123 patients[2]	17	11.5	12	8.1	43	29.1	18	12.2	15	10.1	43	29.1	
Group II: 131 patients	32	15.9	46	22.9	29	14.4	4	2.0	41	20.4	49	24.4	
Group III: 174 patients	47	15.9	74	25.1	38	12.9	4	1.4	66	22.4	66	22.4	
Group IV: 207 patients	65	18.4	119	33.7	45	12.7	—	—	64	18.1	60	17.0	
Group V: 8 patients	1	7.7	5	38.5	4	30.8	—	—	2	15.4	1	7.7	
Prurigo Besnier + Asthma bronchiale													
Group I: 20 patients	4	12.9	3	9.7	7	22.6	8	25.8	3	9.7	6	19.4	
Group II: 21 patients	10	22.7	11	25.0	8	18.2	1	2.3	13	29.5	1	2.3	
Group III: 42 patients	24	25.8	29	31.2	12	12.9	—	—	22	23.7	6	6.5	
Group IV: 53 patients	32	24.8	42	32.6	25	19.4	—	—	25	19.4	5	3.9	
Group V: 8 patients	4	23.5	6	35.3	3	17.6	—	—	3	17.6	1	5.9	
Prurigo Besnier + Rhinitis atopica													
Group I: 9 patients	1	7.1	2	14.3	2	14.3	2	14.3	3	21.4	4	28.6	
Group II: 40 patients	21	27.6	22	23.7	16	17.2	1	1.1	27	29.0	6	6.5	
Group III: 66 patients	30	20.7	44	30.3	21	14.5	—	—	44	30.3	6	4.1	
Group IV: 144 patients	76	24.4	97	31.2	39	12.5	—	—	88	28.3	11	3.5	
Group V: 5 patients	3	30.0	4	40.0	1	10.0	—	—	1	10.0	1	10.0	
Prurigo Besnier + Rhinitis atopica + Asthma bronchiale													
Group I: 6 patients	2	33.3	2	33.3	1	16.7	—	—	—	—	1	16.7	
Group II: 12 patients	9	30.0	6	20.0	7	23.3	—	—	8	26.7	—	—	
Group III: 39 patients	27	24.8	29	26.6	23	21.1	—	—	28	25.7	2	1.8	
Group IV: 88 patients	66	27.5	72	30.9	26	11.2	—	—	64	27.5	7	3.0	
Group V: 4 patients	2	20.0	2	20.0	2	20.0	—	—	4	30.0	1	10.0	
Evaluation:													Sum of reactions
Prurigo Besnier	162	16.0	256	25.3	159	15.7	26	2.6	188	18.6	219	21.7	1010
PB + Asthma bronchiale	74	23.6	91	29.0	55	17.5	9	2.9	66	21.0	19	6.1	314
PB + Rhinitis atopica	131	22.9	169	29.5	79	13.8	3	0.5	163	28.4	28	4.9	573
PB + Rhinitis atopica + Asthma bronchiale	104	26.8	111	28.6	59	15.2	—	—	103	26.5	11	2.8	388

χ^2 test between Prurigo Besnier and Prurigo Besnier + atopic manifestation groups: series I, egg and pollen = $p < 0.1$ %
series II and foods = 5 % $< p$

[1] Food allergens excluding egg [2] One patient has several reactions [3] Age groups (see introduction)
Abbreviations: pos. = positive, PB = Prurigo Besnier

Table 2 b. *Results of immediate skin tests in control groups.*[1]

	Series I		Series II[2]		Foods[3]		Pollen		Negative	
	Number of positive reactions	%	Number of positive reactions	%	Number of positive reactions	%	Number of positive reactions	%	Number of reactions	%
I: 50 patients with a skin disease other than Prurigo Besnier[5]										
A. 33 patients with Eczema-Dermatitis[4]	11	20.0	13	23.6	11	20.0	4	7.3	16	29.1
B. 17 patients with Urticaria	4	18.2	6	27.3	2	9.1	—	—	10	45.5
A+B	15	19.5	19	24.7	13	16.9	4	5.2	26	33.8
II: 50 patients without allergic symptoms and known history[5]	1	2.0	1	2.0	3	6.0	1	2.0	44	88.0

χ^2 test between groups I and II: series I = 0.1 % < p < 1 %
series II = p < 0.1 %
foods = 5 % < p
pollen = 5 % < p

[1] One patient had several reactions
[2] Excluding tests to bacteriae
[3] Including tests to egg
[4] 33 cases of Eczema-Dermatitis: 17 cases of Eczema, not classified
9 cases of Contact Dermatitis
8 cases of doubtful Prurigo Besnier
6 cases of Eczema en plaques
5 cases of Seborrhoic Eczema
4 cases of Irritative Dermatitis
1 case of Neurodermitis Chronica
[5] The ages of the patients correspond to the Prurigo Besnier-groups II—IV

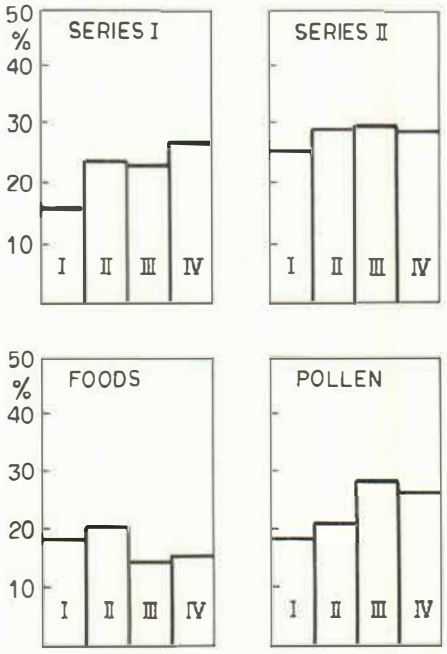

Fig. 1. Positive intracutaneous reactions according to allergen groups.

I = patients with Prurigo Besnier
II = patients with Prurigo Besnier + Asthma bronchiale
III = patients with Prurigo Besnier + Rhinitis atopica
IV = patients with Prurigo Besnier + Asthma bronchiale + Rhinitis atopica

extracts are also given in Table 1 (Series II, No. 9—12). In cases of positive history, a prick test was carried out first, and only if that test was negative, was the investigation continued with an i. c. test. The latter means 20.000 times more liquid (27). Only prick tests were performed in small children and 0.01—0.02 ml were given intradermally in order to avoid the pseudopositive reactions mainly resulting from the greater quantities of liquid. Cases showing dermographism were left out of the statistics for the same reason. In several cases quantitative titration supported further the possibility of real positive reactions.

Several of the allergens used were group allergens so as to limit the test list which was long already (at least 48 allergens). Thus it can happen that an allergen gives a negative reaction after having been diluted with the other ingredients. But the numerous positive reactions obtained with group allergens in the series prove that in case of sensitization of clinical significance, the positive reaction can also be stated in this way. Several tables show separate tests with components of positive group allergens (see tables 4 c and 6 c).

The scratch and i. c. reactions read within 15—30 minutes were compared with the reaction caused by histamine 1 : 10,000, 0.01—0.02 ml. By adding the two largest wheal diameters this was found to be between 25—35 mm and was marked with ++. Reactions under 20 mm were considered negative, those between 20—25: +. Positive reactions between 35—45 were marked with

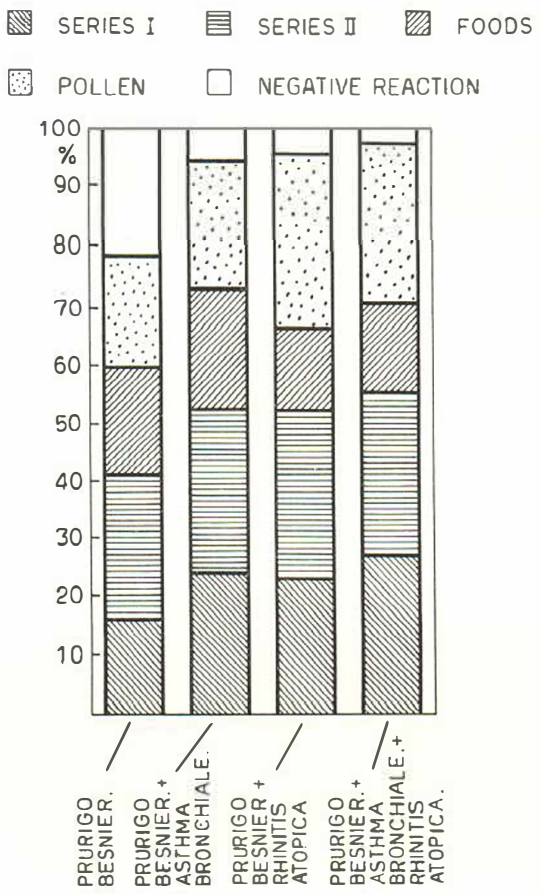

Fig. 2. Positive intracutaneous reactions according to atopic symptoms.

Table 2 c. *Positive immediate skin reactions in 100 patients with Prurigo Besnier (Groups II—IV)*[1]

Positive to one allergen	Positive to two allergens	Positive to 3—5 allergens	Positive to 6—10 allergens	Positive to more than 10 allergens
28	22	33	15	2

[1] excluding group- and cross reactions (see text)

Table 2 d. *Relationship between positive immediate skin reactions and type of allergens in 100 grouped cases of Prurigo Besnier.*

	Inhalant allergens	Food allergens	Inhalants + foods	Negative immediate skin reaction
25 patients, Group I	—	13	2	10
25 patients, Group II	7	1	3	14
25 patients, Group III	9	1	3	12
25 patients, Group IV	12	—	7	6
100	28	15	15	42

Table 3 a. *History of 50 patients with Prurigo Besnier (groups II—IV) positive to animal hair.*

Reg. No.	Positivity in skin test to	Contact with animals	History of sensitivity to animals	Summer Improv.	Summer Deter.	Exposition test
53/54	I/7[1]	0	0			
56	I/6	I/3	0			
79	I/7	0	0			
82	I/7	0	0	+		
91	I/3	I/3	+			I/3+: (Rhinitis)
101	I/3, I/7—8	0	0			
104	I/4	0	0			
138	I/3, I/6	0	0			
139	I/4, I/7	I/3	0			
142	I/3	0	0			
146	I/7—8	0	0			
149	I/7	I/7	+			
153	I/5	0	0	+		
163	I/7	0	0	+		
166	I/7	0	0	+		
199	I/3	0	0	+		
201	I/3	I/3	+	+		
212	I/3, I/7	0	0	+		
215	I/3, I/7	0	0			
220	I/3—6	I/6	+	+		I/6: +
230	I/7—9	I/7	+	+		
54/82	I/6	0	0			
96	I/3	0	0			
100	I/3	I/5	0	+		
102	I/6	I/6	0			I/6: —
190	I/8	0	0		+	
194	I/3	0	0	+		
196	I/6	I/6	0	+		
197	I/7, I/3—4	I/7, I/3—4	0	+		
209	I/3—4, I/6	I/3	+			
211	I/6	0	0	+		
213	I/3	0	0	+		
225	I/3—4, I/6	I/4	+	+		
237	I/4, I/6, I/8	0	0	+		
241	I/3	I/5	0			
250	I/3—4, I/6, I/8	0	0	+		
251	I/3	0	0	+		
273	I/3, I/6	0	0			
278	I/3—4, I/6	0	0	+		
283	I/8	0	0	+		
285	I/3—4	I/3, I/5	+	+		
298	I/3	0	0	+		
303	I/3—4, I/6	0	0			
306	I/3—4	I/4—5	+			I/3—4
317	I/3	I/3	0	+		
320	I/7	0	0	+		
330	I/3	0	0	+		
337	I/3—5	0	0	+		
346	I/3	0	0		+	
359	I/6	0	0	+		

[1] related to the list of allergens (table 1)

Abbreviations:
Improv.: improvement
Deter.: deterioration

Table 3 b. *History of sensitivity to animals not included in the list of allergens (see table 1) in patients with Prurigo Besnier.*

3 times guinea-pig
3 times rabbits (positive intracutaneous test on one patient)
1 time parrot
1 time zebra
1 time reindeer (positive intracutaneous test on one patient)
1 time pig

Table 3 c. *Some contact possibilities with horses according to the case history of patients with PB.*

No. 54/ 30: Girl of 2 years of age, several members of the family ride.
56/151: The patient had horses and the skin reaction to the extract made from his own horse was positive.
53/229: The onset of the PB is due to a stay in a stall.
53/ 11: The patient had contact with a groom.
53/164: The patient had to stop riding because of rhinitis and PB.
54/212: Worse after contact with grooming particles. The patch test is positive.
54/278: Got asthma from horse-hair in mattrasses; the skin test is positive.
54/274: Rides without skin complaints, but the i. c. test was positive.
54/291: Worse after moving to a flat inhabited by a groom.
56/ 21: Worse after contact with grooming particles, the patch is positive. The intracutaneous test was first positive but became negative after hyposensitization.
58/112: The patient ascribes the exacerbation in the course of PB to horse-hair lining in jacket and to certain kinds of sausage. The skin test with horse-hair-extract was positive.

+++, above this with ++++. The patients often showed histamine reactions without flare. From a statistical point of view, it was not distinguished between + and ++—+++ reactions.

Delayed reactions occurred only seldom with bacterial extracts and were exceptional with mold extracts.

It should be noted that in 1954, skin tests with bacterial extracts were not carried out in every case.

In some cases exposure tests were performed and they were read on the skin.

The results of repeated tests are shown in a separate table (see table 7).

The skin tests were carried out by different physicians on homogeneous material and according to identical principles.

Investigations. The results of the skin tests are summarised in table 2 a on basis of the type of allergens and of the atopic manifestations. To facilitate the presentation the results are also given graphically (figures 1 and 2).

For the evaluation of the immediate skin reactions the author also carried out, as far as possible, a test series in control groups. The results are shown in table 2 b, with the exclusion of the bacterial tests which are difficult to evaluate.

The problem of the polyvalence is approached in table 2 c by considering the quantitative distribution of the positive immediate skin reactions in 100 patients with PB. From this point of view, group reactions like III/9—12 and IV/1—2, or cross reactions (III/1—IV/2), respectively, were not considered. Similarly, the reactions obtained with different mold allergens (III/2—III/8) were grouped together.

Table 2 d demonstrates correlations according to types of allergen and by age groups.

The clinical significance of immediate positive skin reactions is discussed according to the allergen groups. From this point of view and in order to

Table 4 a. *Relationship between history and positive intracutaneous tests to molds in 50 patients with Prurigo Besnier (Groups II—IV).*

Reg. No.	Positive immediate skin reaction to[1]	Housing conditions		Fluctuation of PB with env. changes[2]	Exposure test	Other remarks	Possible clinical significance of the test[3]	Course of PB during summer[3]
		Damp	Tree					
53/64	II/4			+			+-	better
67	II/2—3, II/7		+				+?	better
73	II/4, II/7—8		+		—	eating of yeast: no changes	+?	better
87	botrytis				—	confectioner, irritation of yeast	+	better
101	botrytis		+				+?	better
108	II/2—4, II/7—8, pc		+				+?	better
113	II/2, II/7—8, pc			+			+	better
115	II/2, II/4, II/7—8, pc				—		?	better
127	II/2—3, II/6—8, mucor				+	works in a damp cellar	+	better
129	II/2, II/4, 7—8, pc, mu.		+			works at a grocer's	+?	better
131	II/7—8, mucor					worse after cleaning rooms	+	better
132	II/7—8				—		?	worse
133	II/4—8						?	better
138	II/2—3					sensitive to dust and penicillin	+	better
139	II/7						?	better
142	II/7—8, botrytis, mu.						?	better
153	II/2—6, II/8	+		+			+	better
155	pc						?	better
158	II/8					drinking of beer: no changes	?	better
159	mucor						?	better
160	II/7—8						?	better
162	II/4, II/8, bo, pc						?	better
168	II/7—8					eating of fresh bread: no changes	?	worse
169	II/4, II/7—8, pc		+		+		+	better
178	II/8	+					+	better
181	II/7—8						?	better
182	II/3—4, 7—8, bo, pc, mu.			+			+	better
187	II/4, II/8						?	better

188	II/2						?	better
192	II/8	+					+	worse
205	II/3						?	better
206	II/2—3, II/7—8			+			+	better
212	II/2—4, 7—8, bo, pc, mu.						?	better
217	II/2—4, II/7—8, pc, mu.					works at a grocer's	+?	better
220	II/8					confectioner	+?	better
226	II/4, II/7—8, pc, mu.			+		dusty work	+	better
228	II/7, botrytis, mucor	+					+	better
54/84	II/8						?	better
91	II/2, II/8						?	better
100	II/4—5, pc, bo, hormod.						?	better
192	II/4, II/7—8						?	better
196	II/5						?	better
197	II/3—8						?	better
202	II/4—6, II/8						?	better
207	II/7—8						?	better
211	II/2—3, II/7—8						?	better
213	II/5—6, II/8						?	better
225	II/2				−		?	better
228	II/2, II/7—8						?	better
246	II/8	+					+	better
	50 patients						15+; 7+?; 28?	47: better 3: worse

[1] list of allergens (see table 1)
[2] clear correlation between environmental changes and changes in the course of Prurigo Besnier
[3] see text

Abbreviations:
env.: environmental
pc: group-extract of penicillium species (see table 1)
mu.: group-extract of mucor species
horm.: group-extract of hormodendron species
bo.: group-extract of botrytis species

Table 4 b. *Relationship between history and positive immediate skin reactions to house-dust in 50 patients with Prurigo Besnier (Groups II—IV).*

Reg. No.	Immediate skin reaction to molds[1]	Fluctuation of PB with env. changes[2]	Dusty work or "dusty" housing conditions	Course of PB during the summer
53/217	+		+	better
54/194	—			better
202	+			better
211	+			better
225	+			better
237	—			better
250	+		+	better
251	+			better
341	+			better
347	+			better
354	+			better
359	+			better
55/ 42	—			better
43	+			better
48	+			worse
71	—			worse
92	—			better
103	—			worse
111	—		+	better
143	—			better
150	+			better
164	+	+		better
166	+			better
179	+	+	+	better
183	+		+	better
14	+			better
17	—			better
32	—			better
36	+			better
56/ 61	+			better
65	+			better
78	—			better
83	—			worse
87	+			better
90	—			better
102	—			better
108	—			worse
115	+	+		better
117	+	+		worse
121	—			better
149	—			better
156	+			better
57/ 22	+			better
47	—			better
64	+			worse
66	—	+		better
123	—		+	better
131	+			better
58/ 10	+			better
20	+			better
50 patients	30: + 20: —			43: better 7: worse

[1] according to list of allergens (see table 1)
[2] clear correlation between environmental changes and changes in the course of Prurigo Besnier

Abbreviations: PB: Prurigo Besnier

Table 4 c. *Differentiation of group reactions to a mold extract (II/6, see list of allergens).*

Positive to mucor	54 times
Positive to penicillium	51 times
Positive to botrytis	44 times
Positive to hormodendron	14 times

Table 4 d. *Relation of immediate skin reactions to mold and to trichophytin (Hoechst) on patients with Prurigo Besnier.*

		Positive to molds	Negative to molds
Trichophytin-positive:	8	3	5
Trichophytin-negative:	34	17	17
Totals:	42	20	22

Table 4 e. *Relationship of immediate skin reactions to molds and sensitivity to penicillin in patients with Prurigo Besnier.*

	Sensitivity to penicillin		Positive test to molds (relates to list of allergens)						
	Clinical deterioration	Positive tests	II/2	II/3	II/4	II/5	II/6[1]	II/7	II/8
1.	+	—	+	+	—	—	+	—	—
2.	+		—	—	+	—	+	—	+
3.		+	+	+	+	+	+	—	+
4.	+		+	+	+	—	+	—	—
5.	+		+	+	—	—	+	+	+
6.	+		—	+	+	+	—	—	—
7.	+		—	+	—	+	+	—	+
8.	+		+	+	—	+	+	+	+
9.		+	—	—	—	+	+	—	—
10.	+		—	—	—	—	—	—	—
11.	+[2]		—	—	+	—	+	—	—
12.	+	+	—	—	—	—	—	+	+
13.	+		—	—	—	—	—	—	—
14.	+		—	—	+	—	+	—	+

[1] includes even penicillium extract (see table 4 c)
[2] attack of asthma

eliminate the "disturbing" effect of respiratory allergic manifestations on the skin tests, only PB cases not combined with asthma and/or rhinitis were considered. When deciding the significance of the skin tests the author examined the clinical data and the case history of those patients who showed positive skin tests. The reverse procedure is more difficult since a case history is a less suitable starting point when studying for example a history of molds, pollens or everyday foodstuffs.

Table 3 a shows a survey of the clinical significance of reactions to animal hair in 50 patients with PB. Table 3 b illustrates a few special animal hair cases and table 3 c contains some case histories of reactions to horse epithelium.

In table 4 a an attempt was made to evaluate the clinical significance of molds in 50 mold-positive patients. The criteria for positive reaction were damp living conditions, working conditions, possible sources for mold-contact, flare-up

Table 5 a. *Relationship between skin positivity to pollen and seasonal course of Prurigo Besnier.*

Reg. No.	Positivity in series IV and Pollen series	Spring fluctuation in Pr. Besnier	Possible relation to test	Summer fluctuation in Pr. Besnier	Possible relation to test	Provocation test
54/50	1, 3[1]	worse	+	worse	+	
53	1	unchanged	—			
67	1, 3—4	unchanged	—	unchanged	—	
71	1, 3	worse	+	better	—	1:+, 3:+
76	1, 3	unchanged	—	better	—	
87	1, 3	worse	+	better	—	1:+, 3:—
88	1, 3	unchanged	—	better	—	1:—, 3:—
91	1	unchanged	—			
101	1, 4	unchanged	—	better	—	
104	1, 3 4,	unchanged	—	unchanged	—	1:—, 3:—
108	3			better	—	3:—
132	1, 4	worse	+	worse	+	1:2, 4:—
133	3		—	better	—	
142	1	unchanged	—			
167	1, 3	unchanged	—	unchanged	—	1:—, 3:—
173	1, 3, P 3	worse	+	better	—	1:—, 3:—
178	4			better	—	
182	1, 3	worse	+	better	—	1:+, 3:+[2]
195	1	worse	+			
198	4			unchanged	—	
199	1, 3, P 1—3	unchanged	—	better	—	
201	3—4			better	—	3:+, 4:+
215	3			better	—	3:+
222	1	worse	+			
54/77	1	better	—			
82	3			better	—	
96	1, 2, P 1	worse	+			
100	1, 3—4, P 2—8, 10	unchanged	—	better	—	1:+, 3:—, 4:+
102	1	worse	+			1:+
113	P 1	unchanged	—			
195	1	unchanged	—			
196	1, 2, P 6	better	—			
197	P 1—2, 6	unchanged	—	better	—	[3]
199	1, 3, P 1—2	unchanged	—	better	—	
202	P 1	worse	+			
207	1	worse	+			
209	1 P 2, 6	unchanged	—			
211	1	unchanged	—			
213	1—3	unchanged	—	better	—	
222	1—2	unchanged	—			
232	1	unchanged	—			
239	1, 4	unchanged	—	unchanged	—	
250	1, 3	unchanged	—	better	—	
54/260	1 P 1	worse	+			1:+
269	4			worse	+	
271	1, P 2	unchanged	—			
273	3			unchanged	—	3:+
283	3, P 2	unchanged	—	better	—	
285	1—2, P 1	unchanged	—			P 1:+
289	1, P 1—3	worse	+			
50 patients			14+ 27—		3+ 26—	

[1] IV/1, IV/3 etc. according to list of allergens (see table 1)
[2] deterioration in military service
[3] deterioration at exposure to hay

Table 5 b. *Incidence of immediate skin reactions to pollen series according to list of allergens of patients with Prurigo Besnier (see table 1).*

	Number of positive immediate skin reactions:
Alder	93
Hazel	90
Oak	57
Reed	48
Wheat	34
Spruce	31
Pine	23
Sallow	22
Dandelion	13
Juniper	12
Asp	10
Elm	9

Table 6 a. *History of food sensitivity and immediate skin reactions in patients with Prurigo Besnier.*

History of food sensitivity				No history of food sensitivity		
	Result of skin tests				Result of skin tests	
	Positive and fits with history	Positive to other food allergens	Negative		Positive to foods	Negative to foods
25 patients, Group I	5	6	14	25 patients, Group I	7	18
25 patients, Group II	7	4	14	25 patients, Group II	1	24
25 patients, Group III	5	4	16	25 patients, Group III	9	16
25 patients, Group IV	4	5	16	25 patients, Group IV	7	18
100	21	19	60	100	24	76

in connection with environmental changes, positive exposure tests and other circumstances related to mold exposure. By an environmental change is meant, for example, when living in a more humid place and among other circumstances, summer fluctuations, in the course of PB were registered.

In Table 4 b patients with PB and with positive reactions to house-dust were subjected to similar evaluation. Table 4 c gives the results obtained by differentiating the mold group allergen II/6. Table 4 d shows the relationship between, on one hand, immediate and delayed reactions to trichophytine and, on the other hand, immediate reactions to molds. The trichophytine injected was 0.01 ml of a concentration of 1 : 30 (trichophytine Hoechst). In Table 4 e the results of mold tests are shown in 14 PB-patients with clinical sensitivity to or with positive skin tests to penicillin.

In Table 5 a the parallelism of spring and summer fluctuations and of pollen sensitivity was investigated in 50 PB-patients. Table 5 b contains the results obtained by testing with the pollen series.

Table 6 a shows relationship of immediate skin reactions and case history of foods in PB patients grouped according to age with and without a case history

Table 6 b. *Relationship of history and immediate skin reactions to foods in patients with Prurigo Besnier.*

Reg. No.	ON THE SAME PATIENT		
	Agreement of history and skin test to:	History of sensitivity to other foods:	Positive skin test to other foods:
Group I/2	Corn		
17	Wheat		
18	Cacao	Apple, orange, oat	
34	Wheat		
38	Orange	Banana, Red currant	Egg
Group II/76	Nut	Orange, Cabbage	
85	Herring	Pea	Apple, tomato
87	Egg, cacao	Herring	
100 a	Egg	Milk	
101 a	Cacao	Apple	
102 a	Egg	Spinach, pea	Cacao
103 a	Egg	Cacao, veal	
Group III/101	Cacao, nut, apple, orange	Fish, egg	Shellfish, wheat, corn
115	Cacao, shellfish	Egg	
129	Cacao	Orange	
100 a	Cacao, orange	Spices, egg	Vegetables
Group IV/163	Egg	Orange	
182	Cacao	Fish, apple, pear	Nut, wheat, rye
212	Cacao, shellfish	Apple, vegetables	Oat, corn
100 a	Cacao		Oat, barley, milk, egg, fruits
101 a	Apple		Orange
Total 21	Cacao: 10 times Egg: 5 times Orange: 3 times		

Table 6 c. *Differentiation of group reactions to foods in patients with Prurigo Besnier according to list of allergens (table 1).*

IV/9		IV/11		IV/12		IV/7	
lobster	(3×)	orange	(14×)	tomato	(9×)	codfish	(13×)
shrimps	(2×)	apples	(6×)	carrots	(4×)	baltic herring	(8×)
crowfish	(1×)	plums	(2×)	spinach	(3×)	pike	(6×)
		banana	(1×)	peas	(3×)	perch	(6×)
				beans	(2×)	whitefish	(6×)
						haddock	(6×)
						pikeperck	(5×)
						herring	(4×)
						sole	(4×)
						sardines	(1×)

of food allergy. Table 6 b contains the analysis of cases with agreement between case history and skin tests to foods. In Table 6 c food group-allergens were differentiated according to various components. In Table 6 d an attempt has been made to group different symptoms due to food according to the case history of the PB patients. Table 6 e shows the role played in atopy and in acne of certain more frequently occurring food allergens.

In Table 6 f thrombocyte tests were carried out with different foodstuffs on 50 children suffering from PB on the basis of history, or in case of a negative

Table 6 d. *History of food sensitivity in patients with Prurigo Besnier.*

Perioral itching	Perioral dermatitis	Labial itching	Labial edema	Oral itching	Oral aphthae	Oral mucosa edema
apples (2x)	chocolate (2x)	egg	orange (2x)	almonds (3x)	nuts (2x)	nuts
cheese (2x)	orange (2x)	chocolate	fish (2x)	nuts (3x)	egg	
banana	nuts	cheese	peas (2x)	apples	chocolate	
tomato	wine		peaches (2x)	hip	parsley	
cucumber			egg		apples	
nuts			chocolate		hip	
			banana		tomato	
			grapes		fish	
			honey			
			lard			

Throat itching	Laringeal edema	Vomitus	Gastric pain	Malaise	Diarrhoea
nutt (3x)	egg (3x)	egg (5x)	nuts	egg (5x)	shellfish
fish	nuts (2x)	shellfish (3x)	oranges	fish (2x)	
milk	fish	fish (3x)		chocolate	
apples	almonds	banana		lard	
berries		apples			
carrots		peaches			
honey		pears			
		tomato			
		milk			
		carrots			
		beans			

Itching of the skin	Urticaria
chocolate (6x)	fish (8x)
spices (4x)	shellfish (5x)
shellfish (3x)	egg (5x)
orange (2x)	nuts (3x)
apples (2x)	apples (2x)
cheese (2x)	peas (2x)
egg (2x)	honey (2x)
wine (2x)	strawberries
blueberries	plum
hip	grapefruit
strawberries	fresh fruit
plum	pear
fish	almond
nuts	tomato
oat	chocolate
	cheese
	coco

case history, on the basis of positive ingestion tests. In 20 out of these 50 patients also scratch tests were made with negative result. Positive ingestion test means that during the hospitalisation period after exposure to certain foods, the skin of the patient showed a clear deterioration. Thrombocytes were counted according to the Fonio-method by comparing the values before as well as 30, 60, and 90 minutes after the peroral food exposure. The test was considered

Table 6 e. *Significance of positive immediate skin reactions to foods in patients with Prurigo Besnier.*

	History of food-induced pruritus in patients with Prurigo Besnier[1]	Possible hypersensitivity reactions to foods in patients with Prurigo Besnier[2]	Asthma-inducing foods in patients with PB + Asthma br.[3]	Rhinitis-inducing foods in patients with PB + Rhinitis[3]	Foods with acnegenic effect
Egg	++	++	++ (35)	++ (101)	
Fish (sea-)	+	+	+++	+++	+[4] (7,107)
Shellfish	++	++	+		+[4] (7,107)
Chocolate	+++	+++	++ (50)	++	++ (7,101, 107)
Apples	++	++	++	+	
Oranges	++	++			+ (7,101, 107)
Tomato					+ (7,101)
Spinach					+[4] (101)
Nuts	+	+	+	+	+ (7,101, 107)
Wheat		+	+ (50)	++ (101)	+ (101)
Milk			++ (35)	++ (101)	+ (7,101)
Cheese	++				++ (107,7)

[1] According to Table 6 d
[2] According to Table 6 b
[3] Data from the author's material and from the literature
[4] Acnegenic owing to content of iodine. Literature data Number refers to the list of references

Abbreviations:
PB: Prurigo Besnier
br.: Bronchiale

positive if the number of the thrombocytes was reduced more than 20 per cent. In 40 cases double tests were made. In these tests 100 g of food, half a fruit, a wheat cake etc. were ingested.

Table 7 gives the results of repeated tests made an interval of minimum one year in 75 patients with PB. The aim of this comparison is to show which allergen reactions are lost, or what new sensitization reactions have arisen.

Results and discussion

According to the results in the PB age groups II—IV of Table 2 a, the allergens of series II prevail (molds, dust and bacteriae) as well as pollens. The food- and animal hair series follow. Table 2 a also shows the differences in allergen groups in the various age groups. Table 2 a and Figure 1 show significant differences between patients with PB solely and with PB plus respiratory manifestations in relation to series I and to pollens. The higher rate of positive immediate reactions in the group of respiratory manifestations is apparent (see Table 2 a and Figure 2).

In the first group of Table 2 b, there is a great number of positive immediate reactions. The explanation may be that many of these patients can be considered as allergic. The data of the second, "nonallergic" group are however more important. In this group the most positive immediate reactions were due

Table 6 f. *Thrombocyte-test with foods in 50 children with Prurigo Besnier (Group I).*

Patients	Skin reaction		History	Ingestion test	Thrombocyte test
	Negative	Not made			
Hc. A.	Egg		+		+
	Fish [1]		−		+
	Peas		+		−
Hu. A.	Apple		+		+
A. A. K.	Egg		+	+	−
A. B. M.	Egg		+	−[2]	+
Lu. U.	Pears		−	+	+
We. A.	Apple		−	+	+
	Carrots		−	+	+
Wa. L.	Chocolate		+		−
He. L.		Orange	−	+	+
A. L. G.	Apple		+	+	+
		Cauliflower	−	+	+
We. G.		Egg [1]	+	+	+
Eh. U.		Orange	+	−	+
Li. G.		Spinach	+		+
P. T.		Orange	+	−	+
K. PO.		Haddock	−	+	+
J. S. O.		Spinach	−	+	−
WHO		Orange	+		+
Hell. A.		Egg	+		+
L. G.	Egg		+		+
	Milk		+		−
L. L.		Vanilla	+		+
W. M.	Oat		+		−
L. P.	Banana		+	−	+
	Chocolate		+		+
G. S.		Hip	−	+	+
	Chocolate		−	+	+
W. A.		Cheese	+	−	−
V. G.		Egg	+		+
K. L.	Egg		+	−	−
	Orange		+	+	−
H. G.	Egg		+	−	−
S. H.		Orange	+	−	−
N. A.		Hip	+	+	−
J. M.		Egg	+		+
W. M.		Apple	+	−	+
Ho. A.		Chocolate	+	+	−
R. B.		Peas	+		+
Z. Y.		Peas	+		+
R. T.		Orange	+		+
		Tomato	+		+
G. P.		Chocolate	+		−
W. N.		Egg [1]	−		+
M. B.		Apple	−	+	−
W. B. E.		Egg	+		−
He. E.		Egg	+		+
N. B.		Cheese	+		−
W. A.		Orange	+	+	+
50 Cases	20	30	50	26	33 + 17 −

26 Cases with ingestion test: Concordance with the Thrombocyte test: 15 times:
of 17 positive cases 11 times
of 9 negative cases 4 times
Discordance with the Thrombocyte test: 11 times

[1] the patient has earlier had positive skin test to the food
[2] the patient has earlier had positive exposure test to the food

Table 7. *The fluctuation of allergens on the basis of repeated intracutaneous tests in 75 patients with Prurigo Besnier.*[1] [2]

Acquired Allergens[3]

	SERIES I										SERIES II											SERIES III												SERIES IV											
	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Group I PB	1			1									1			1														1						1										
PB+A/R			1														1	1							1			1		1						2					1					
Group II PB				1		1																	1			1						1			2		1								
PB+A/R	1													1			1	1					1													1					1	1				1
Group III PB	1	1									3	1	2	2	2	2	1	3	1	1															2		1	2								
PB+A/R	2	3	1	3	2	1	1				2	4	3	3		3	2	3	1	1			2	1											2	1	3	1	1		2					
Group IV PB	1		1								1	1	1	4		3	1	3		2				1				1							1		1	2			1			1		
PB+A/R	3	3	1	4	1	1	2	1		2	6	4	2	2	6	4	5	5	5	6	1		5	4	2	2	2	1	1	1	2	2	2		4	6	7	3	2	1	2		1	1		2
Group V PB																	1																												
PB+A/R	1			1																1		1				1						1					1								

Lost Allergens[4]

Group I PB					1																		1								1	1					1								
PB+A/R																								1					1	2	2	1	1	1	1		1							1
Group II PB																																													
PB+A/R																																													
Group III PB					1						1	4	2			2	6	3					1						1						1		1			4	1	1			
PB+A/R	3	1			1						3	1				1							2	1												1				1			1		
Group IV PB											1	3	3			1	2	2		1			1	2				1							1		1			1					
PB+A/R	4	4	4	1	1	3	1	1	2		2	2	3	2		6	8	3					2	2	1		2	1	3	1	2				2	3	1			2	1	1	2	1		1
Group V PB																																													
PB+A/R																							1						1																

[1] time interval between the i. c. tests minimum one year
[2] allergens according the list of allergens (see table 1)
[3] allergens which were positive only in the second i. c. test
[4] allergens which were positive only in the first i. c. test

Abbreviation: PB + A/R: Prurigo Besnier with Asthma bronchiale and/or Rhinitis atopica

to foods. The sources of error in these data are: (1) the limites series from a statistical point of view, (ii) the comparatively unreliable character of the case history and (iii) the fact that all patients were hospitalized skin and medical cases and not a "normal" population from a statistical point of view. At any rate, the results in group II in Table 2 b indicate that no high pseudopositivity seems to prevail to the allergens used. This might be an argument favouring the specificity of the immediate skin reaction in this investigation. As demonstrated in Table 2 c, more than 10 positive skin reactions occur exceptionally in the same patient. Furthermore it is possible that in the pollen and animal hair series cross reactions occur between allergens of the same group. This study cannot solve the problems of nonspecific-specific combinations or of regularity versus coincidence respectively. Yet the results suggest that in half of the cases only 1 to 2 and in a further third only 3 to 5 positive immediate skin reactions can be found in a PB-patient. In cases where many positive reactions are found in the same patient with PB it might more probably be a question of group allergy. Even Table 2 d illustrates the known fact that with increasing age the importance of food allergens decreases, whereas the importance of inhalants increases in patients with PB (40).

1. *Inhalants*

Table 3 a shows that only about one third of the patients had possible contacts with animals. Even in case of positive contacts the case history is often negative concerning known sensitivity to animals. History and immediate skin reactions only agree in 9 cases, i. e. in about one fifth of the patients. Most of the animal contacts take place in summer time, but the patients whose data could be controlled in this respect improved during the summer. Thus any relationship between these two factors does not seem likely.

Even if one keeps in mind that the contact with and sensitization to animals often are caused by animal products — such as mattresses, upholstered furniture, meat products and horse serum as pointed out by Hård (31) — and not only through the obvious examples enumerated in Table 3 b, it is still remarkable that for four fifths of the patients there seems to be no relationship between history and skin test in this respect.

According to Table 4 a and on basis of the indications mentioned, a probable relationship between skin test and case history could be stated in 15 patients. In 7 other cases the relationship is not sufficiently convincing, but in 5 out of them the living in wooden houses might be a source of the mold sensitization. For several reasons it is, however, very difficult to evaluate the relationship between history and i. c. positivity to molds. In three fourths of the cases only yeast reactions occur and the question is whether they do so as atmospheric or peroral factors. These reactions may also be of more suggestive value. It has to be taken into account that the author instead of long and difficult individual mold analyse only worked in these studies with a mixture of mold species and thus perhaps not always with the true allergens. Most of the mold-sensitive patients generally reacted to mold species showing only small seasonal variations (such as penicillium, mucor and aspergillus). On the other hand the mold season in Sweden reaches its top during the summer. The proportion of summer im-

provement shown in Table 4 a, is higher than the average in such data of patients with PB. This makes it difficult to evaluate the relationship with summer improvement.

The problem might be summarized to that in a certain part of mold-positive PB-patients the clinical significance of the reactions might be assumed to be present and it is possible that with alterations in the technic (better extracts, changes in concentrations, reading of delayed reactions etc.) further progress can be made in this field. According to Table 4 b, which summarizes the skin reactions to house dust, 60 percent of this series were even sensitive to molds. This points to the importance of the mold allergens in these reactions in the author's series. Also in this group the ratio of summer improvements is higher than the average but lower than in the mold-group. Table 4 c illustrates the predominance of the allergenicity of mucor and penicillium strains. No relationship can be found between mold and trichophytine reactions according to Table 4 d. This observation speaks against the etiologic influence of dermatophytes in PB. There were only delayed reactions to trichophytine in the author's material. Table 4 e shows that penicillin-sensitive individuals react positively to the group allergen containing penicillium species (11/6), and cross reactions to other mold allergens occur. Thus in the case of penicillin sensitivity the latter reactions, like trichophytine reactions, play a suggestive role.

Table 5 a shows that spring pollens can only be made responsible for one-third of the exacerbations in PB-patients in springtime. The same applies to summer pollens but only in 10 per cent. Amongst spring pollens alder and hazel are leading the list in allergenicity (Table 5 b) as well as birch. The great majority of PB-patients sensitive to summer pollens (chiefly to timothy grass) showed summer improvement. Thus spring pollens play a limited role and summer pollens a small part in the course of PB (the seasonal course will also be discussed in a following communication).

2. *Foods*

The skin reactions to foods are negative in most of the patients with a positive food history according to Table 6 a. These two factors agree in only one-fifth of the PB-patients. The skin reaction proved to be positive in one fourth of the patients without a food history. Thus, one might speak of a considerable divergence between history and skin tests to foods. Nilzén (64) also mentions that in 6 patients with PB had strong reactions to food allergens the case history was negative in 5 cases. In the cases where history and immediate skin reactions agree, cacao, i. e. chocolate, and egg should be mentioned first, followed by orange (Table 6 b). The differentiation of food group-allergens is given in Table 6 c. In the fruit-group, oranges, and amongst the vegetables, tomatoes, were responsible for the most positive skin reactions. It should be noted that among the patients of the series a group with allergy to foods belonging to the same biologic group was very seldom found.

Table 6 d gives a picture of the complaints due to different foodstuffs. The complaints refer to various parts of the digestive tract and the skin. The few data indicate that, for example, nuts and almonds give rise to lip and mouth complaints, while egg, fish and shellfish also influence the stomach and the

intestinal tract. The explanation is suggestive that digested nuts and almonds are weaker allergens. From the point of view of the PB the substances are most important which elicit itching of the skin. Here chocolate comes first followed by spices, oranges, shellfish, apples, cheese, egg and wine. Amongst the urticariogenic substances in PB-patients one should first name fish, shellfish and egg which at the same time also influence the digestive tract. Then follow nuts in the order of frequency.

The chief pruritus-eliciting foods are summarized in Table 6 e in order to illustrate their mechanism. The data derive from the Tables 6 d (itching-eliciting foodstuffs) and from Table 6 b (agreement between history and skin reactions to foods). Furthermore, the foods provoking asthma and rhinitis are also mentioned according to the history in the author's cases with respiratory allergic symptoms. These data were completed with further information from the literature as was also the case with acnegenic foods.

As regards the mechanism of foods in PB, there seem to be three possibilities:

(i) *The allergic mechanism.* According to Table 6 e the foods which cause most trouble to patients with PB are those where antibodies can generally be demonstrated on the basis of positive skin tests. This strongly supports an allergic mechanism. Agreement with foods causing asthma and rhinitis is somewhat more limited in the series, and it therefor does not seem appropriate to speak of "atopens".

(ii) *Influence on dermatophysiologic conditions.* If it is assumed that the majority of the foods exert their effect on a nonallergic basis, one should think — in the first instance — of vasodilatatory effects and influence on the pilosebaceous apparatus; but there might also be an effect on sweat glands and enzyme systems. According to the data of Table 6 e, the acnegenic and pruritogenic effect (with some exceptions) do not run parallel with the PB series.

However, some observations speak in favour of this mechanism in the PB patients of the series:

a) Many foods influence only an already inflammated skin. Thus the patients tolerate foods in summer, but not in wintertime.

b) The pruritogenic effect of alcoholic beverages and spices — based on their vasodilatatory property in PB-patients — is almost general.

c) Certain PB-patients have symptoms only after consumption of foods in large quantities or during a long period. The lower antibody-titer to these foods has, of course, also to be considered.

d) Certain PB-patients react to more acid substances, for example to some sour kinds of apples and oranges. In such cases, however, one has to think of the possibility of allergenic changes during storage. Further group reactions to these fruits should also be considered.

e) The divergence between immediate skin reactions and exposure tests in connection with foods in PB-patients should also be mentioned.

(iii). *The pruritogenic effect.* Many foods like fish and shellfish are "strong foreign proteins" for the organism and cause itching not only by means of antibody production, but also without this cause. The mechanism probably develops through histamine liberation, analogous to the urticariogenic substances where mechanisms unrelated to antibodies also exist. Strawberries, almost the best known urticariogenic food, cause histamine liberation (82). This coincides

closely with the opinion of Rostenberg (79) who with a tomato example illustrates how it causes endogenous irritation of the shock tissue and thus causes itching. If antibodies were present, according to this author, new prurigo-lesions ought to arise.

It is likely that the mechanisms under (ii) and (iii) are not independent of each other. They may even represent a united mechanism (pruritogenic effect?).

The thrombocyte test was positive in 33 and negative in 17 cases according to Table 6 f. The history obtained from the parents and based on exposure at home is less reliable than the provocation (ingestion) test in the hospital. But even the latter may have many sources of error. As a rule these two tests have varied for the patients in question. The results of the thrombocyte test was thus compared with the provocation tests, and the author found a correspondance in 15 cases, and diverging results in 11 cases. Compared with the history the ratio is 25 : 25. It is however, also essential that of the 20 children showing negative skin tests 13 had positive thrombocyte tests. Thus the thrombocyte test has only a relative value as a diagnostic method in connection with the food sensitivity of PB-children; but it is more reliable than the skin test. From the technical point of view, divergence was found in 3 cases out of 40. Limits of error of 20 per cent were selected on the basis of Nilzén's (63) investigations. There was no relationship between various foods and the result or type of the test. The same individual could react differently to various foodstuffs. No severe distress was noticeable after the thrombocyte test, but several flare-ups could be observed. This may be considered as a significant disadvantage of the thrombocyte test compared to skin testing.

3. *Bacterial reactions*

Bacterial reactions were recorded in the series, but owing to evaluation problems no conclusions were drawn. Recently Nilzén (63) performed thrombocyte tests with bacterial extracts in PB-patients and found thrombocyte decrease exceeding 20 per cent. The role of bacterial infections in PB will be considered by the author in a subsequent communication.

Table 7 shows that in the non-combined PB case, there were some more acquired than lost allergen reactions. It is interesting to note that there is not a single lost allergen reaction in the age group II. As regards the allergen groups, slightly more lost reactions were in the food group (series III and IV/6—12) and on the other hand somewhat more acquired allergen reactions are found in the others. This resembles the data in Table 2 d. The most acquired reactions are due to: cow hair, trichothecium, monilia albicans, brewery years, staphylococcal toxoid and staphylococcus vaccine, oat and pollens (IV/1—4).

On the other hand, there are more lost allergens in the case of baking yeast and of chocolate.

Evaluation of immediate skin reactions

It is difficult to indicate the value of immediate skin reactions in non-combined PB cases in this series. It is clear that — as a rule — the clinical significance of skin reactions to animal hair, pollens (especially summer pollens)

and to foods is small, although it may be of value in individual cases. The possibility of evaluating bacterial tests is limited. The value of the positive mold tests cannot yet be decided, although it may relatively be the most important one. It cannot contribute to a solution whether the PB-patients are divided into "nonallergic", "allergic", "combined with respiratory allergy" or "combined with food allergy" etc. groups since these factors play a quite different role in PB-patients depending on individual backgrounds, on time periods and on the influence of various agents.

The author does not pretend to furnish a solution to the evaluation of immediate skin reactions in PB-patients. However the following summary of the assumptions in the literature are discussed (79, 64, 54).

The interpretation of the positive immediate reactions to some proteins may be that protein does only affect the pruritus playing a central role in the mechanism of PB. On the other hand, it may be possible that it refers to a concomitant sensitization affecting other reactivities than those of PB. However the role of the allergen as a producer of the atopic symptoms cannot be rejected. The elimination of this substance, or hyposensitization influencing the titer of antibodies, has a favourable influence whereas that of the protein substance has an aggravating effect on the course of the PB probably without affecting the unknown basic mechanism. In certain cases when this substance has a frequent effect or an effect favoured by unknown factors, the repeated itching can start the process which leads to lichenification and to prurigo papules. In these cases the substance plays an important incidental role in the mechanisms of the PB.

It may be assumed that a special disposition is required to produce the lichenification and prurigo lesions after itching. This disposition cannot be simplified to the effect that it represents an increased capacity of reagin-production since only a small fraction of the atopic patients with intense reagin-forming capacity (asthma bronchiale, rhinitis atopica) develops PB. It cannot merely be a matter of hereditary factors either as in light of the literature, and on the basis of what has been stated in a previous communication by the author (73), they play no decisive part in several of the pathogenic problems of PB. The disposition probably means a complex process where the above factors can also be included.

Part II

Epicutaneous reactions in patients with Prurigo Besnier

1. *Allergens*

In addition to corium and the small vessels probably the epithelium also acts as shock tissue in PB. The contact factors play, as a rule, a small part. Generally, few positive reactions have been observed with patch tests (12). Blumenthal & Jaffe (10) found no positivity at all when examining 40 cases. In 43 PB-patients Nexmand (59) found reactions to turpentine in 7, to formaldehyde and chromium in 2 cases each and to nickel in one case. Skog & Thyresson (88) did not find higher positive values in patients with PB, comparable to those in contact dermatitis. When investigating 304 cases of PB these authors found patch positivity in 19.1 per cent. In this respect, the opinions expressed in the literature largely agree.

The occurrence of certain special forms of reactions in connection with PB-mechanism, may be discussed as follows:

a) Atopics respond with a vesiculopustulous reaction to nickel and chromium (96). According to more recent investigations these pustular patch reactions occur in atopics as well in nonatopics. These are no allergic or toxic reactions; they form a special group from a clinical and histological point of view (26). The histologic picture shows intraepidermal pustular reaction related to sweat ducts (102).

b) Positive epicutaneous reactions can be observed to certain proteins (1, 71) or to human dander (85, 86, 53) on the skin of patients with PB. This is probably due to transfollicular penetration facilitated by pathophysiologic disturbances (59, 95). Further positive i. c. reactions to human dander extract could be observed (87). Nexmand (60) opines that the type of this epicutaneous reaction is of another character than the acute whealing or patch reaction. This author further states that if the assumption is real and the patients are allergic to proteins of their own horny layer, continuous scratching will bring about a production of allergens.

c) Epstein (19—21) singles out dermal contact dermatitis mainly due to metals and drugs. In these cases, in addition to negative patch reactions, positive i. c. reactions were demonstrated. The histologic picture shows only dermal alterations but no spongiotic lesions. The patch test may, however, be positive in the form of a delayed popular reaction. In these cases, vesicular spongiosis can be observed around the sweat ducts (45). Jillson *et al.* (45) explain this phenomenon by the fact that "the antigen fixed in its particular location is influenced in some way by a reagenic antigen-antibody combination". This is analoguous to the observations of Strauss & Kligman (93), (see Part I).

d) Storck (91) describes a sensitization dermatitis to inhalants. The differential diagnosis against PB is very difficult, sometimes impossible. In his cases he observed immediate as well as delayed (patch) reactions.

e) Behrbohm (9) describes *neuroderma professionalis* in 54 cases. Chromium compounds were the main causes of this disease. Even positive scratch and patch tests could be observed. This lesion corresponds in morphologic respect to PB and might quite signify dermal hypersensitivity combined with PB.

2. *Irritation*

Skin alterations due to mechanical stimuli might occur in patients with PB. Thus Korting (48) speaks of "isomorphe Reaktionsbereitschaft" (Scheuereffekt). Yet involvement of the hands most exposed to external irritation is not uncommon, but nevertheless not very frequent in PB. According to Nexmand (59), the dorsa of the hands were involved in 34 per cent is his series, whereas the cubital space was involved in 76 per cent.

Although alkali-neutralisation is limited in PB (15) the alkali damages did not occur in the manifestation or in the maintaining of the disease (49). Cantharidin blisters are larger and richer in protein in patients with PB than in normal individuals. Further removed blisters show many akantholytic cells, which is otherwise seldom observed. The mechanism is probably increased epithelium fragility (3).

Table 8. *Epicutaneous reactions in patients with Prurigo Besnier (Group I—V).*

1. Reactions to epicutaneous routine series:

Patch test done in 535 patients
Positivity in 126 patients = 23.5 %
Analysis of the 126 positive cases:

$K_2Cr_2O_7$	49 reactions = 9.1 %	of the patients tested
Formaldehyde	45 reactions = 8.4 %	
P-phenylenediamine	44 reactions = 8.2 %	
Nickel	39 reactions = 7.3 %	
Oil of turpentine	8 reactions = 1.5 %	
$HgCl_2$	5 reactions = 0.9 %	

2. Contact allergens of significance in 400 patients with Prurigo Besnier according to the case history:

Incidence in 14 cases = 3.5 %
Analysis:
Nickel (3 cases)
Chrome
Chrome and Nickel
Chrome and P-phenylenediamine
Persulfate substances
Wheat flour
Yeast
Orange peel
WC board
Benzalkonium solution
Tooth paste
Cosmetic cream

Table 9. *Epicutaneous reactions of catharidin of different concentrations in 25 patients with Prurigo Besnier and in controls.*

		Prurigo-Group 18 women + 7 men						Control-Group 17 women + 8 men					
		Number of reactions						Number of reactions					
		−	+/−	+	2+	3+	4+	−	+/−	+	2+	3+	4+
Conc. of catharidin	100%	—	2	9	12	—	2	—	6	16	3	—	—
	50%	1	1	15	6	1	1	3	7	13	2	—	—
	25%	5	6	11	2	1	—	6	10	8	1	—	—
	12%	8	9	6	2	—	—	5	13	6	1	—	—
	6%	11	8	4	2	—	—	11	13	1	—	—	—
	Sum	25	26	45	24	2	3	25	49	44	7	—	—

Evaluation:

	<2+	≥2+	
Prurigo-Group	96	29	125
Control-Group	118	7	125
	214	36	250

χ^2 test between Prurigo and control group = $p < 0.1$ %

The atopic skin (the prickle cells?) is more resistent to friction according to the studies of Naylor (58). In cases of chronic friction, lichenification is, however, more easily produced.

Mayer (54) emphasizes the low incidence of unspecific, polyvalent hypersensitivity to primary skin irritants in patients with PB in contrast to patients with acute contact dermatitis.

The author's investigations

The results of epicutaneous tests carried out in 535 patients with PB are summarized in Table 8. The epicutaneous routine testing included: 50 % oil of turpentine, 0.5 % $K_2Cr_2O_7$, 3 % $NiSO_4$, 2 % P-phenylenediamine, 2 % formaldehyde, 0.1 % $HgCl_2$, 1 % chinine, 0.5 % iodine in spirit. dilut. and synthetic detergents. The cases in which PB-patients, on the basis of history, attribute importance to contact allergens in eliciting or maintaining the disease, are also shown in Table 8.

For irritation studies in patients with PB the cantharidine with its non-alkali characteristics seemed most appropriate. In Table 9 the skin reactions of 25 PB-patients and of 25 control persons were recorded after 24 hours' application of cantharidine. The concentrations applied were: 6 %, 12 %, 25 %, 50 % and 100 %. The dilutions were made in olive oil. The following designations were applied to the readings:

+/—: maceration, +: scattered papulopustulous reaction, ++: diffuse papulopustulous reaction, +++: confluent greater pustulae, ++++: bullae with pustular content or necrosis.

Results and Discussion

The occurrence of positive reactions in the PB-series was 23.5 per cent, as shown in Table 8. This approximately agrees with Skog & Thyresson's (88) data. This indicates that positive epicutaneous reactions are not too numerous in patients with PB. In this respect the leading allergens were chromium, formaldehyde, p-phenylenediamine and nickel. Even according to the case history metals were the chief allergens in the PB-patients.

How can the relatively low epicutaneous sensitivity in PB be explained? Korting (48) emphasized that due to low sebaceous excretion, high sensitization values might be expected in patients with PB; this is however not the case. Skog (89) studied by applying "sensitizing" and irritant concentrations of 3-pentadecylcatechol the sensitization capacity and the tolerance threshold of — inter alia — PB-patients and found no statistically significant differences between PB-patients and controls.

According to Table 9 there is a significant difference as compared with the controls in PB-patients as regards stronger reactions (++ — ++++). This makes it possible to observe easily the decreased resistance of the PB-skin and its greater fragility to the obligatory irritant cantharidin.

The decreased resistance of the PB-skin to obligatory irritants has probably to do with the pathologic vascular function and further with sebum and sweat secretory functions. In the case of cantharidin an inhibition of the utilisation

of magnesium ions was found in the atopic skin (3 b). It is not clear whether there is a difference in the resistance of the PB-skin to cantharidin and to other obligatory irritant substances.

The reasons for the relatively small contact sensitivity of the PB-skin and at the same time its greater fragility is not clear. Experimentally it has been shown that *mild* irritants reduce the skin reactivity to contact allergens (32, 23). On the other hand, the sensitization facilitating role of the irritation is well-known.

The clinical significance of the increased fragility of the PB-skin to an obligatory irritant substance is not clear either. It may be assumed that the reduced resistance to *strong* external traumata plays a role in the course of this chronic disease.

SUMMARY

In the first part of the present communication the author describes the results of immediate skin reactions carried out in 1200 patients with Prurigo Besnier (PB) using more than 48 different, biologically standardized allergens. Results are presented according to age groups and according to the occurrence of respiratory allergic combinations. In the PB-patients without respiratory symptoms the most positive reactions were obtained to (i) molds, dust and bacteriae and (ii) to pollens. Control tests in 50 nonallergic persons showed no considerable pseudopositivity to the allergens used. A considerable number of the patients with PB only reacted to a few allergens. In agreement with other investigators the author also found that with increased age the importance of food allergens decreases, while that of inhalants increases in PB-patients.

An attempt is made to evaluate the positive immediate skin reactions in PB on the basis of case history, clinical data and exposure tests carried out in certain cases. Amongst mold reactions the reactions to mucor, penicillium and botrytis species were more frequent than to hormodendron. There was no relationship between trichophytine and mold reactions in this series. The majority of 14 PB-patients proved sensitive to penicillin also reacted to other mold allergens. In the author's series 60 per cent of the persons with reactions to house-dust were also mold sensitive. Of springtime pollens birch, alder and hazel caused the most positive immediate skin reaction. In food allergy there seemed to be little relationship between case history and skin testing; most agreements were found as regards chocolate and egg. Of the fish allergens most of the positive reactions were to codfish. The foods of which the patients with PB mostly complained, were ranged according to the body parts affected. A comparison is made of the effect of foods in PB, in other atopic diseases as well as in acne. On this basis the role of foods in the PB pathogenesis is discussed. Thrombocyte tests carried out in 50 children with PB show that these tests are only of relative value although they are more reliable than skin tests with commercial extracts.

The results of repeated tests carried out in 75 patients at an interval of more than one year presented including newly acquired as well as lost allergen reactivity.

According to an evaluation presented the general clinical significance of immediate positive skin reactions to animal hair, pollens and foods is small in PB, although it may be important in some individual cases. The evaluation of bacterial tests is very difficult and that of the mold reactions is very complex, although the relative importance of these procedures cannot be decided at

present. The author discusses the importance of immediate skin reactions in the mechanism of PB.

In the second part of the present paper the author gives the results of epicutaneous tests performed in 533 patients with PB. A 23.5 per cent positivity found is considered to be relatively low compared with contact dermatitis. Cantharidine patch reactions were carried out by 24 hour's exposure in 25 patients. The PB-patients reacted much more strongly to solutions of higher concentration than did the control persons. The relatively low contact sensitivity as well as the decreased resistance to obligatory irritant substances in PB are discussed.

RÉSUMÉ

Dans la première partie du travail, l'auteur communique les résultats des tests intradermiques (et des tests de scarification) pratiqués avec au moins 48 allergènes standardisés différents chez 1200 patients atteints de prurigo de Besnier (PB). Les résultats sont mis en relation avec l'âge et l'association à des manifestations respiratoires. En l'absence de ces dernières, les réactions positives les plus fréquentes sont obtenues avec la série II (champignons, poussières et bactéries) et le pollen. Les tests de contrôle chez des sujets non allergiques (50 personnes) n'ont montré une haute pseudoréactivité. Un nombre considérable de malades ne réagirent qu'à peu d'allergènes. En concordance avec la littérature, l'auteur trouva que la signification de l'allergie aux substances alimentaires diminuait avec l'âge, tandis qu'augmentait l'importance des allergènes respiratoires.

L'auteur essaie d'évaluer la signification des tests positifs par rapport à l'anamnèse, les données cliniques et, dans de nombreux cas, les tests d'exposition. Parmi les réactions aux champignons, celles à Mucor, Penicillium et Botrytis sont plus fréquentes qu'Hormodendron. Il n'est pas apparu de relation entre la trichophytine et les hyphomycètes dans cette série. La majorité des 14 patients sensibilisés à la pénicilline réagissaient également à d'autres allergènes hyphomycètes. 60 % des patients réagissant à la poussière de maison réagissaient également aux hyphomycètes. Parmi les pollens de printemps, le bouleau, l'aune et le noisetier donnent les réactions les plus fréquentes. Dans l'allergie alimentaire, il ne semble exister qu'une relation restreinte entre l'annamnèse et les tests, les concordances les plus fréquentes concernant les œufs et le chocolat. Parmi les poissons, le cabillau donne les réactions les plus fréquentes. Les aliments considérés par les malades comme les plus mal supportés ont été consignés selon les parties affectées du corps. On a comparé l'effet de ces substances dans le PB et d'autres atopies, ainsi que dans l'acné, et discuté sur cette base le mécanisme de l'allergie alimentaire dans le PB. Chez 50 enfants, les tests thrombocytaires pratiqués montrèrent leur signification limitée, mais cependant supérieure à celle des tests cutanés pratiqués avec les extraits commerciaux.

En outre, les résultats de tests répétés montrèrent l'apparition de réactivités nouvelles et la disparition de réactivités anciennes, chez 75 patients testés à des intervalles de plus d'un an.

La signification clinique générale des tests aux poils d'animaux, aux pollens et aux aliments au cours du PB est limitée, bien qu'elle peut être utile dans certains cas. L'évaluation des tests bactériens est très difficile, et celle des tests mycotiques — bien que peut-être la plus importante — ne peut être donnée actuellement. L'auteur discute le rôle des réactions intracutanées dans la pathogénie du PB.

Dans la deuxième partie, l'auteur communique les résultats des tests épicutanés pratiqués chez 535 patients atteints de PB. En comparaison avec la dermite de contact, le pourcentage trouvé est de 23,5 % inférieur. Chez 25 patients, les réactions à la cantharidine (24 h) ont été pratiquées. Les malades réagirent plus violemment que les personnes normales aux solutions concentrées. La sensibilisation de contact relativement réduite et, d'autre part, la résistance diminuée envers les irritants primaires obligatoires, sont discutées.

ZUSAMMENFASSUNG

Im ersten Teil der Arbeit teilt der Autor die Resultate von 1200 Patienten mit Prurigo Besnier (PB) durchgeführten Intracutantesten bei (bzw. Skarifikationstesten) mit wenigstens 48 verschiedenen biologisch standardisierten Allergenen mit. Die Argebnisse werden in bezug auf das Alter sowie hinsichtlich Kombination mit Respirationsallergien mitgeteilt. Bei PB-Patienten ohne Symptome von seiten der Respirationsorgane wurden die meisten positiven Reaktionen mit der Serie II (Schimmelpilze, Staub und Bakterien) und mit Pollen erhalten. Wie Kontrollteste bei 50 nichtallergischen Personen zeigten, ergab sich keine besondere Pseudopositivität auf die verwendeten Allergene. Eine beträchtliche Anzahl von Patienten mit PB reagierten nur auf wenige Allergene. In Übereinstimmung mit anderen fand der Autor, dass mit zunehmendem Alter die Bedeutung von Nahrungsmittelallergenen fällt, wogegen diejenige von Inhalationsallergenen bei PB-Patienten zunimmt.

Der Autor versucht, die positiven Teste in Beziehung zu Anamnese, klinischen Befunden und bei manchen Fällen durchgeführten Expositionstesten zu bewerten. Unter den Reaktionen auf Schimmelpilze waren diejenigen auf Mucor, Penicillium und Botrytis-Arten häufiger als auf Hormodendron. Es ergab sich keine Beziehung zwischen Trichophytin — und Schimmelpilzreaktionen in dieser Serie. Die Mehrzahl von 14 PB-Patienten, die gegen Penicillin sensibilisiert waren, reagierten auch auf andere Schimmelpilzallergene. In der Untersuchungsreihe des Autors waren 60 % der auf Hausstaub Reagierenden auch positiv auf Schimmelpilze. Von Frühlingspollen riefen Birke, Erle und Haselnuss am meisten positive intracutane Reaktionen hervor. Bei Nahrungsmittelallergie schien nur geringe Beziehung zwischen Vorgeschichte und Hauttesten zu bestehen, am meisten Übereinstimmungen fanden sich noch bei Schokolade und Eiern. Von den Fischallergenen führte Kabeljau am häufigsten zu positiven Reaktionen. Die von den Patienten am meisten als unerträglich angegebenen Nahrungsmittel wurden entsprechend ihrer Wirkung auf verschiedene Körperteile erwähnt. Es wurde ein Vergleich der Wirkung von Nahrungsmitteln auf PB und andere atopische Krankheiten sowie auf Akne angestellt, und auf dieser Basis der Wirkungsmechanismus von Nahrungsmittel bei PB diskutiert. Bei 50 Kindern mit PB durchgeführte Thrombocyten-Teste zeigten, dass diese Teste nur von verhältnismässig geringem Wert sind, aber immerhin noch zuverlässiger als mit handelsüblichen Extrakten vorgenommene Hautteste.

Weiterhin werden die Ergebnisse von wiederholten Testen mitgeteilt, die bei 75 Patienten in Intervallen von mehr als 1 Jahr durchgeführt wurden, wobei neu aufgetretene sowie verloren gegangene allergische Reaktionen angegeben wurden.

Wie die Auswertung ergab, ist die allgemeine klinische Bedeutung von Hauttesten mit tierischen Haaren, Pollen und Nahrungsmitteln bei der PB nur gering, obgleich sie in manchen Fällen wertvoll sein können. Die Beurteilung von Bakterien-Testen ist sehr schwierig, und diejenige von Schimmelpilz-Reaktionen, —

obgleich vielleicht die relativ wichtigste, — kann zur Zeit noch nicht gegeben werden. Der Autor diskutiert die Rolle von Intracutan-Reaktionen in der Pathogenese von PB.

Im zweiten Teil, teilt der Verf. die Resultate von epicutanen Testen bei 535 Patienten mit PB mit. Im Vergleich zur Kontaktdermatitis ist der gefundene Prozentsatz von 23,5 % positiven Testen relativ gering. Bei 25 Patienten wurden Cantharidin-Reaktionen (24 stündige Exposition) hervorgerufen. Die PB-Patienten reagierten stärker als Normalpersonen auf höher konzentrierte Lösungen. Die relativ geringe Kontaktsensibilisierung und andererseits die herabgesetzte Resistenz gegenüber obligatorisch reizenden Stoffen bei der PB werden diskutiert.

RESUMEN

En la primera parte de la comunicación el autor publica los resultados de pruebas intradérmicas (y skarification) practicadas en 1200 pacientes con PB, por lo menos con 48 alergenos biológicamente estandardizados. Los resultados se exponen de acuerdo con la edad y según la presencia de combinaciones alérgicas respiratorias. En los enfermos de PB sin síntomas respiratorios se obtuvieron las reacciones más positivas a las series II (hongos, polvo y bacterias) y a los pólenes. Según las pruebas de control en 50 personas no alérgicas, no se encontraron pseudopositividades en número considerable a los alergenos usados. Un número importante de pacientes con PB sólo reaccionaron a algunos alergenos. De acuerdo con otros el autor encuentra también que a medida que la edad aumenta disminuye la importancia de alergenos alimenticios, mientras que aumenta el de los inhalantes en los enfermos de PB.

El autor trata de valorar las pruebas cutáneas en el PB a base de la historia, datos clínicos y exposición a los «tests» practicados en algunos casos. Entre las reacciones a hongos, las del moho, penicillium y la especie botrytis, fueron más frecuentes que la hormodendron. No hubo relación entre las reacciones de hongos de estas series y la tricofitina. La mayoría de 14 pacientes de PB probados sensibles a la penicilina reaccionaban también a alergenos por otros hongos. En las series del autor, el 60 por ciento de los que reaccionaron al polvo de casa eran también sensibles a hongos. De los pólenes primaverales aliso y avellano fueron causantes de la mayoría de reacciones positivas intradérmicas. En alergia alimenticia no parece haber gran relación entre la historia clínica y la prueba cutánea, la mayoría de las concordancias se encontraron en el chocolate y el huevo. De los alergenos de pescado el bacalao fué el que causó la mayoría de positividades. Los alimentos más inculpados por los pacientes de PB fueron ordenados de acuerdo con la parte afecta. Se compara el efecto de los alimentos en el PB y otras enfermedades atópicas, así como en el acné. Basándose en esto se discute el mecanismo de los alimentos en el PB. La prueba de trombocitos practicada en 50 niños con PB demuestra que este «test» sólo tiene un valor relativo pero es más seguro que las pruebas cutáneas efectuadas con extractos comerciales.

Se publican los resultados de «tests» repetidos en 75 enfermos a intervalos de más de un año, dando los últimos adquiridos y la pérdida de reacciones alérgicas.

Según la valoración, el significado clínico general de las reacciones cutáneas a pelo de animales, pólenes y alimentos en escaso en el PB, aunque en ciertos casos individuales puede ser muy importante. La valoración de «tests» bacterianos es muy difícil, así como las reacciones a hongos, aunque quizá los

relativamente más importantes todavía no se puede decidir. El autor discute la importancia de las reacciones intradérmicas en el patomecanismo del PB.

En la segunda parte el autor da los resultados de las pruebas epidérmicas practicadas en 535 enfermos de PB. El 23,5 por ciento de positividades es relativamente bajo comparado con la dermitis de contacto. Las pruebas epicutáneas con cantaridina de 24 horas de exposición fueron practicadas en 25 enfermos. Los pacientes de PB reaccionaron mucho más enérgicamente a las altas concentraciones que las personas sanas. Se discuten la relativamente baja sensibilidad de contacto y, por otra parte, la resistencia decreciente de los enfermos de PB a las sustancias irritantes obligadas.

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