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**INTRADERMAL TESTS WITH MICROBIAL
ALLERGENS DURING PROTRACTED AND
CHRONIC DISEASES OF CHILDREN'S RESPIRA-
TORY ORGANS**

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Wright-Patterson Air Force Base, Ohio**

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Block	Italic	Transliteration	Block	Italic	Transliteration
А а	А а	A, a	Р р	Р р	R, r
Б б	Б б	B, b	С с	С с	S, s
В в	В в	V, v	Т т	Т т	T, t
Г г	Г г	G, g	У у	У у	U, u
Д д	Д д	D, d	Ф ф	Ф ф	F, f
Е е	Е е	Ye, ye; E, e*	Х х	Х х	Kh, kh
Ж ж	Ж ж	Zh, zh	Ц ц	Ц ц	Ts, ts
З з	З з	Z, z	Ч ч	Ч ч	Ch, ch
И и	И и	I, i	Ш ш	Ш ш	Sh, sh
Й й	Й й	Y, y	Щ щ	Щ щ	Shch, shch
К к	К к	K, k	Ъ ъ	Ъ ъ	"
Л л	Л л	L, l	Ы ы	Ы ы	Y, y
М м	М м	M, m	Ь ь	Ь ь	'
Н н	Н н	N, n	Э э	Э э	E, e
О о	О о	O, o	Ю ю	Ю ю	Yu, yu
П п	П п	P, p	Я я	Я я	Ya, ya

*ye initially, after vowels, and after ъ, ь; e elsewhere.
 When written as ë in Russian, transliterate as yë or ë.
 The use of diacritical marks is preferred, but such marks
 may be omitted when expediency dictates.

GRAPHICS DISCLAIMER

All figures, graphics, tables, equations, etc.
 merged into this translation were extracted
 from the best quality copy available.

RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English
sin	sin
cos	cos
tg	tan
ctg	cot
sec	sec
cosec	csc
sh	sinh
ch	cosh
th	tanh
cth	coth
sch	sech
csch	csch
arc sin	\sin^{-1}
arc cos	\cos^{-1}
arc tg	\tan^{-1}
arc ctg	\cot^{-1}
arc sec	\sec^{-1}
arc cosec	\csc^{-1}
arc sh	\sinh^{-1}
arc ch	\cosh^{-1}
arc th	\tanh^{-1}
arc cth	\coth^{-1}
arc sch	sech^{-1}
arc csch	csch^{-1}
—	
rot	curl
lg	log

**INTRADERMAL TESTS WITH MICROBIAL
ALLERGENS DURING PROTRACTED AND
CHRONIC DISEASES OF CHILDREN'S
RESPIRATORY ORGANS**

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There is undisputed interest in the study and more precise definition of the factors, which play a role in the pathogenetic mechanisms of the development of chronic broncho-pulmonary tuberculosis in general, and of children in particular. Recently allergies have been assigned a large role in the formation of protracted and recurrent pulmonary tuberculosis. There are many different substances capable of causing the allergization in an organism; in this respect microbes, viruses, medications, alimentary factors, etc., occupy a special place.

The purpose of our work was to explain the degree of allergic disposition of patients with various forms of broncho-pulmonary tuberculosis to allergens prepared from the microbes which are most frequently detected in bronchial contents during the diseases indicated below.

In the present report data are presented that were obtained while conducting intradermal tests with the bacterial allergens of

hemolytic staphylococcus, hemolytic streptococcus, and *Proteus vulgaris* on 136 patients. One hundred fourteen essentially healthy children: 21 school-aged children and 93 children from 9 months to 4 years old made up the control group.

Allergens produced by the Kazan Scientific Research Institute of Epidemiology, Microbiology and Hygiene were used for the skin reactions. The allergens were used according to the following scheme: children up to 3 years old were given 1 skin dose, those from 3 to 7 years - 2 doses, and school-aged children - 4. Allergens at the indicated doses of 0.1 ml in volume were introduced intradermally using a tuberculin syringe on the inner surface of the forearm. The reaction was observed immediately following the injection (within 20 min.), after 24 hours, and after 48 hours. Depending on the degree of changes in the skin, it was described as negative (-), doubtful (+), weakly positive (++) , positive (+++) and strongly positive (++++).

It is necessary to note that with an increase in the concentration of the allergen the number of positive reactions sharply increases; thus, the choice of allergen concentration for intradermal tests has great significance.

After an intradermal test a positive reaction can appear within 20 min. (called an immediate type reaction), and also after 24 and 48 hours (a delayed type reaction).

In our studies, the most characteristic and most pronounced reaction occurred after 24 hours; so henceforth we will cite data obtained after 24 hours.

During the study of the control group children positive skin-allergic tests were recorded for 18 individuals (15.7%). Table 1 shows that in children of this group most frequently had a positive reaction with *Proteus vulgaris* allergens. A positive reaction to

2 allergens was established in 3 patients. It was determined that 11 children had earlier been repeatedly ill with influenza, catarrhs of the respiratory tracts, pneumonia and otitis, but during this study they turned out to be essentially healthy. In 7 children we found connections of the positive skin test with previous diseases, but we noted moderately expressed hypotrophy, rachitis and anemia. One cannot exclude the fact that their infection followed a latent course; therefore, their parents did not seek medical aid.

Table 1. Skin-allergic test results for children in the control group.

Allergen	Reaction recording time	Reaction manifestation				
		-	+	++	+++	++++
		Number of children				
From staphylococcus (hemolytic)	Up to					
	20 min	101	7	4	2	0
	24 h	80	11	18	3	2
From streptococcus (hemolytic)	48 h	103	6	5	0	0
	Up to					
	20 min	108	3	2	1	0
From Proteus vulgaris	24 h	103	8	3	0	0
	48 h	112	1	1	0	0
	Up to					
Physiological solution	20 min	103	5	3	3	0
	24 h	64	16	18	12	4
	48 h	85	17	7	3	2
	Up to					
	20 min	110	4	0	0	0
	24 h	101	13	0	0	0
	48 h	112	2	0	0	0

In the clinic 144 patients (67 girls and 77 boys) with various forms of chronic broncho-pulmonary tuberculosis were under our observation. Forty-two children had sinusobronchopathy, 68 - chronic bronchitis, and 36 - chronic pneumonia with bronchiectasis. The children's age ranged from 6 months to 14 years (toddlers - 32 individuals, preschoolers - 53, school-aged - 59). The patients in all of the groups underwent a full clinical examinations with supplementary roentgenological, otorhinolaryngological, bronchiological and functional studies.

All 42 patients with sinusobronchopathy were of pre-school age. Their case histories showed frequent catarrhs of the breathing passages, influenza, and frequent "catarrhal" diseases. In an absolute majority of the children changes in the nasopharynx (chronic tonsillitis, rhinitis, sinusitis, pharyngitis) and transitory changes on the part of the bronchi and lungs were established. According to A. K. Svetlova (1967), adenosinusobronchopathy is "generalized pulmonary allergosis." Skin-allergic test results for the patients from this group are represented in Table 2.

Table 2. Skin-allergic test results for the patients with sinusobronchopathy (reaction recorded after 24 h).

Allergen	Reaction manifestation				
	-	+	++	+++	++++
	number of patients				
From staphylococcus (hemolytic)	12	8	6	10	6
From streptococcus (hemolytic)	10	4	6	11	5
From Proteus vulgaris	11	8	3	8	4
Physiological solution	40	2	0	0	0

A positive reaction to 1 allergen was found in 12 children, to 2 allergens - in 7, to 3 - in 6, in 24 patients (57.1%) the reaction was positive and strongly positive, in 15 - weakly positive.

In the patients with chronic bronchitis the manifestation of changes on the part of the nasopharynx were absent; there were no children with an asthmatic syndrome among them. (From the clinical picture the diseases corresponded to stage I of chronic non-specific pneumonia, according to Borisov's classification.) Test results for the patients in this group are given in Table 3. Positive skin-allergic tests were noted in 33 individuals (48.5%). In this group there were fewer children reacting positively to several allergens at the same time.

In the third group of patients (36 children) even more significant changes in the lungs were manifested. During bronchiographic study localized and wide-spread bronchiectases of primarily mixed character were identified in them. (The diseases corresponded to stage III of chronic pneumonia, according to Borisov's classification.) The nasopharynx was afflicted in more than half of the children. The results of the reactions are given in Table 4. A

Table 3. Skin-allergic test results for patients with chronic bronchitis (reaction recorded after 24 h).

(a) Аллерген	(b) Выраженность реакции				
	-	+	++	+++	++++
	(c) число больных				
(d) Ис. стафилококка (гемолитич.)					
(e) стрептококка (гемолитич.)	35	1	13	12	7
(f) протей (физиол.)	20	14	10	16	8
(g) физиол. раствор	18	20	18	10	2
	64	4	0	0	0

Key: (a) allergen; (b) reaction manifestation; (c) number of patients; (d) from staphylococcus (hemolytic); (e) from streptococcus (hemolytic); (f) from Proteus vulgaris; (g) physiological solution.

positive reaction was noted in 20 children (55.5%), a percentage considerably higher than that in the group of patients with chronic bronchitis, but lower than that of the children with sinusobronchiopathy.

The results of the skin allergic tests were compared with data from clinical, roentgenological, laboratory, bacteriological, bronchological and cytological research and were considered during the choice of comprehensive therapy. The results of allergic tests showed little change during the process of the short-term course of medical treatment in the hospital, but the reactions were more marked during the period of aggravation of the pulmonary tuberculosis. The correspondance between

a positive intradermal allergic reaction and the type of microbe, isolated by cultures from the bronchi's contents was not noted in all of the children.

An article by a group of staff members from our department (A. I. Perevoshchikova with co-authors, reported 1967) on positive experience in diagnosing the allergic disposition of an organism and the specific desensitizing medical treatment of patients with sinusobronchopathy. Works in this field are being continued.

Conclusions

1. In patients with protracted and chronic broncho-pulmonary tuberculosis positive reactions to streptococcal and staphylococcal allergens are found equally often.

Table 4. Skin-allergic test results for the patients with chronic pneumonia with bronchiectasis (reaction recorded after 24 h).

(a) Allergen	(b) Intensity of reaction				
	--	-	+	++	+++
	(c) number of patients				
(d) Staphylococcus (hemolytic)	15	2	8	7	4
(e) Streptococcus (hemolytic)	11	9	5	6	5
(f) Proteus vulgaris	13	12	6	4	1
(g) Physiological solution	3	3	--	--	--

Key: (a) allergen; (b) reaction manifestation; (c) number of patients; (d) from staphylococcus (hemolytic); (e) from streptococcus (hemolytic); (f) from Proteus vulgaris; (g) physiological solution.

2. Allergic tests were more often positive in patients with simultaneous afflictions of the lungs and nasopharynx. The frequency of positive tests did not increase significantly with the progression of pulmonary tuberculosis.

3. Intradermal tests with bacterial allergens subthreshold doses have a sufficiently high degree of specificity.

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