

IMMUNOLOGIC CHANGES OF PATIENTS WITH ACTIVE PULMONARY TUBERCULOSIS AFTER TUBERCULIN PROVOCATION

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The changes of humoral immunity and their relation and interaction with some phenomena of delayed hypersensitivity in case of active tuberculosis (TBC) are still not clarified enough (1, 2, 13). Recently, numerous immunologic investigations of lung TBC were started on the basis of the changes of cytoreactivity and cytolysis of immunologically competent cells under the influence of a specific antigen (tuberculin). One can mention either the blast transformation reaction (BTR) of lymphocytes, inhibition of macrophage migration, allergic alteration of leucocytes, reaction of spontaneous rosette formation and some other indices, generally reflecting the state of T-system (3, 6, 8, 10) or studies of that one of B-system (serum immunoglobulins, complement, B-rosettes and others) (4, 7, 12, 14, 15, 16, 17).

Usually, either indexes of humoral immunity (9), or of cellular one (10) are determined by means of various tests after tuberculin provocation. That's why the purpose of our present study is to compare the changes of indices characterizing as well the cellular immunity, as the humoral one after PPD provocation in patients with active lung TBC.

Material and methods

The study covered 30 patients with new-diagnosed active infiltrative-pneumonic TBC at destruction stage. TB (Koch) positive as they were, they were still untreated by that time. The following indices were determined in any patients before and 72 hours after an injection s. c. with 20 IU of PPD: serum immunoglobulins (Ig G, Ig M and Ig A) level after Mancini; total complement after the method of Kabat and Meyer; BTR of lymphocytes after T. Novelle et al.; T-rosettes, modification of L. Stefanova (11), and nucleolar index after M. Kilyovska-E. Chakarov (5). Same indices were also determined in 30 clinically healthy persons.

Results and discussion

The results from the investigations are presented on tables 1 and 2.

The initial mean levels of three immunoglobulin classes IgG, IgM and IgA are considerably higher but the mean complement level is significantly lower in patients with active lung TBC as compared with those of the controls ($p < 0,05$). BTR, the rosette test and nucleolar index are strongly suppressed (table 1).

Ig G, Ig A and Ig M increase reliably in patients with TBC after PPD provocation (table 2); but the titer of complement doesn't change considerably in comparison with its initial level. BTR, induced with PHA, the T-rosette test,

Table 1
Comparison of some indices of cellular and humoral immunity in patients with active pulmonary TBC

Indices	Patients (n=30)		Healthy (n=30)		p
	\bar{x}	Sx	\bar{x}	Sx	
Ig G	23,763	$\pm 0,976$	11,31	$\pm 0,78$	p 0,05
Ig A	5,28	$\pm 0,305$	2,14	$\pm 0,0225$	p 0,05
Ig M	1,74	$\pm 0,0786$	1,0694	$\pm 0,0425$	p 0,05
Complement (CHE)	18,6	$\pm 0,99$	32,19	$\pm 0,62$	p 0,05
RBT	1,35	$\pm 0,79$	5,1	$\pm 0,64$	p 0,001
Ros. test	7,2	$\pm 0,078$	38,0	$\pm 0,79$	p 0,001
Nucleolar index	0,62	$\pm 0,013$	1,21	$\pm 0,03$	p 0,05

Table 2
Changes of some indices reflecting cellular and humoral immunity after PPD provocation in patients with active pulmonary TBC n=30

Indices	Before PPD provocation		After PPD provocation		p
	\bar{x}	Sx	\bar{x}	Sx	
Ig G	23,763	$\pm 0,976$	37,59	$\pm 1,0256$	p 0,01
Ig A	5,284	$\pm 0,3058$	6,151	$\pm 0,3126$	p 0,05
Ig M	1,74	$\pm 0,0786$	2,373	$\pm 0,0804$	p 0,05
Complement (CHE)	18,6	$\pm 0,99$	18,1	$\pm 0,79$	p 0,05
RBT	1,35	$\pm 0,79$	1,28	$\pm 1,33$	p 0,05
Ros. test	7,2	$\pm 0,78$	7,1	$\pm 0,25$	p 0,05
Nucleolar index	0,62	$\pm 0,013$	0,56	$\pm 0,016$	p 0,05

and nucleolar index do not show any statistically significant changes and remain considerably lowered even after tuberculin provocation.

The results received demonstrate that the potential activity of T-lymphocytes is strongly suppressed in patients with an expressed active pulmonary TBC at destruction stage and bacillary excretion. Probably, that's why PPD provocation doesn't cause any significant changes of the indexes of delayed hypersensitivity. To the contrary, the functional activity of B-lymphocytes is strongly increased in these patients as resulted in high levels of Ig G and Ig A and sometimes even of Ig M, too. PPD provocation induces a more outlined increase of these indexes which reflect the state of humoral immunity.

We can conclude that high levels of serum immunoglobulins and low ones of complement are established in lung TBC patients at destruction stage. BTR, the rosette test and nucleolar index displays diminished levels in these patients. After antigenic PPD provocation the indices of humoral immunity increase quite distinctly while those of cell-mediated one don't change considerably.

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ИММУНОЛОГИЧЕСКИЕ ИЗМЕНЕНИЯ У БОЛЬНЫХ АКТИВНЫМ ЛЕГОЧНЫМ ТУБЕРКУЛЕЗОМ ПОСЛЕ ВВЕДЕНИЯ ТУБЕРКУЛИНА

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РЕЗЮМЕ

У 30 больных с впервые установленным активным туберкулезом легких прослежены изменения гуморального и внутриклеточного медирированных иммунитетов после введения ППД. У больных легочным туберкулезом в активной форме наблюдается высокие стоимости комплемента. У тех же больных устанавливаются низкие стоимости реакции бласттрансформации розеточного теста и нуклеарного индекса. После антигенного провоцирования ППД показатели, характеризующее гуморальный иммунитет отчетливо возрастают, в то время как в показателях, характеризующих клеточного-медирированный иммунитет, существенных изменений не обнаруживается.