Dorsomedial Thalamotomy (VIII): Changes of Blood Components.

By

Toyaji Wada and Tokijiro Sato.

(和田 豊治) (佐藤 時治郎)

From the Department of Neuropsychiatry, Tohoku University,
Sendai (Director: Prof. T. Ishibashi.)

(Received for publication, April 26, 1951)

In order to investigate the influences of dorsomedial thalamotomy¹⁾ upon blood components, this research has been undertaken. In this paper, the results on red cells, leucocytes, lymphocytes and blood sedimentation rate are reported in comparison with the results corresponding after lobotomy.

The investigations were performed in preoperative (one week before) and postoperative (one, two and three weeks and 30 days after) stadiums. The results are shown in Table I. Those 13 cases consisted of 6 thalamotomized cases, 4 lobotomized ones, and 3 thalamotomized ones, in which lobotomy had been made 3 or more months ago. Here it must

TABLE I.
Results of Measurement in 13 Cases of Schizophrenia.

Examination	Date	Thalamotomized cases						L. & T. C.			Lobot. cases			
		1	2	3	4	5	6	7	8	9	10	11	12	13
Number of red cells (in million)	before oper.	4.5	4.8	4.5	4.8	4.9	5.1	4.8	5.5	4.0	5.8	4.1	4.5	3.8
	7 d. after	3.7	4.2	4.2	3.6	4.6	3.6	4.0	4.0	4.0	...	...	...	...
	14 d. "	4.4	4.3	4.0	4.5	4.9	5.3	4.5	4.2	4.9	4.4	4.5	4.6	4.8
	30 d. "	3.2	...	...	4.1	4.4	...	4.7	...	4.1	...	...	...	...
Number of leucocytes (in thousand)	before oper.	6.1	5.2	6.9	4.8	6.2	7.2	7.6	5.6	8.3	7.2	7.4	7.7	6.8
	7 d. after	5.7	4.7	4.5	4.9	4.7	5.1	4.4	5.9	5.7	...	...	...	...
	14 d. "	5.6	4.4	5.6	4.1	5.6	4.5	6.4	5.9	4.6	8.8	8.3	7.9	7.2
	30 d. "	5.3	...	...	4.5	7.1	...	3.6	...	4.2	...	...	...	...
Lymphocytes (in %-value)	before oper.	29	27	19	31	23	48	35	29	40	36	21	36	53
	7 d. after	27	38	22	38	25	29	30	31	35	...	...	...	...
	14 d. "	34	34	40	16	24	36	39	34	32	40	5	30	28
	30 d. "	27	...	...	31	27	...	42	...	39	...	...	...	...
Blood sediment. rate (in aver. val.)	before oper.	12	25	6	2	10	2	3	10	15	6	17	7	10
	7 d. after	26	52	20	3	12	3	2	16	23	...	...	...	...
	14 d. "	19	56	9	11	20	2	2	12	30	6	11	19	10
	30 d. "	31	...	...	...	12	...	2	...	20	...	...	...	...

Fig. 1. Alternation of the changes of blood components in 16 cases of schizophrenia in the first two weeks after operation, in comparison with the values in the preoperative stadium. Black squares indicate the data of thalamotomized cases; white squares, those of thalamotomized and lobotomized cases, and oblique squares those of lobotomized cases.

be noticed that those results are given by no other means having influences upon blood components, than the operation, since we have omitted the cases complaining of somatic disorders, such as tuberculosis, ascariasis, remarkable anemia, heart diseases, etc., and also, those treated with sulfamide-preparation or penicillin.

The results might be summarized as follows: erythropenia, lymphocytosis, leucopenia and increase of blood sedimentation rate (b. s. r.) occurred almost uniformly in the first one week after thalamotomy operation. In the first 2 and 3 weeks, the tendency toward such changes were still observed (s. Fig. 1). After 39 days, the changes seemed almost to return to preoperative level. The tendency of changes in cases of prefrontal lobotomy alone was opposite; erythrocytosis, leucocytosis, lymphocytosis and irregular pictures in b. s. r. In cases of lobotomy with thalamotomy, the results were manifest, although the tendency toward lymphocytosis and increase of b. s. r. were recognized.

As above mentioned, the changes following thalamotomy operation were reversible, which means that the changes are rather transient. Consequently, it may be said that thalamotomy does not bring forth any such severe disturbances in blood components, that do not allow its clinical application.

It seems difficult to make adequate comment on such changes. Sporadically, there were exceptional cases. One of them might result

from the abnormality of blood components of schizophrenia themselves: in fact, there were certain abnormal data in preoperative stadium. On other hands, dorsomedial thalamotomy means an invasion to the dorsomedial thalamic part; however, the function of the dorsomedial thalamic nucleus for blood components seems still obscure. If the changes described above actually resulted from the operation itself, it may be unable to deny the function of dorsomedial nucleus²⁾ in blood components regulation. Whether or not this owes to the indirect mechanism, such as a transient disturbance of hypothalamic part due to interruption of internuclear connections,³⁾⁴⁾ must be anew pursued by experimental searches.

CONCLUSION.

The changes were uniform: erythropenia, leucopenia, lymphocytosis and increase of blood sedimentation rate. However, those changes were almost transient and seemed to tend generally to return to preoperative level within one month, and consequently, thalamotomy seems practicable, since there were scarcely observed any severe side-effects in blood components. That most of changes due to thalamotomy stood in contrast to those following prefrontal lobotomy, was mentioned, in addition to some comments on mechanism of the changes.

References.

- 1) Wada, T., *Folia Psychiat. Neurol. Japon.*, 1951, **4**, 309.
 - 2) Rose, *Msschr. f. Psychiat.*, 1950, **120**, 378.
 - 3) Walker, J. *Nerv. Ment. Dis.*, 1937, **85**, 249.
 - 4) Kure and Okinaka, *Jiritsu-Shinkei-Kei (Autonomic Nervous System)*, Jap. Med. Serv. Station, Tokyo, 1949.
-