

A NOTE ON SOME VASOMOTOR DISTURBANCES IN SCHIZOPHRENIA.

By LOUIS MINSKI, M.D., M.R.C.P.,

Deputy Medical Superintendent, St. Ebba's Hospital, Epsom.

AMONG the metabolic disturbances in schizophrenia there occur in many cases symptoms which are the result of vasomotor instability or upset. The causation of this vasomotor instability is not known, and it may in turn be due to undiscovered metabolic disturbances.

Cyanosed and œdematous extremities are almost constantly seen in cases of schizophrenic stupor which have continued for any length of time, but are much less commonly seen in cases of chronic schizophrenia which are not stuporose. In two of the cases in this series the patients were deteriorated, hallucinated and disjointed in talk, but remained in this state for two years before becoming stuporose. For the two years prior to passing into the stupor there were no signs of cyanosis, but two to three months afterwards their extremities were blue and œdematous. This cannot be accounted for by lack of exercise and underactivity, as massage and passive movements had no effect on the cyanosis in any of the cases.

Bullæ often appear on the cyanosed parts, which become mottled in colour and in some cases almost black.

One girl, aged 17, who was admitted in a stupor had marked cyanosis of the extremities, which resulted in gangrene of all her toes, definite lines of demarcation appearing. The toes were amputated, and the feet still remained cyanosed at the time of her discharge one year later.

Many of these cases, in addition, are subject to sudden attacks of collapse which, for want of a better term, may be called vaso-vagal in type. The patient becomes pallid, often vomits, the blood-pressure and pulse-rate fall (often to 50) and the temperature is subnormal. Within 10 to 15 minutes the attack passes off, the chief factor in aiding recovery appearing to be warmth. In all these patients there was no evidence of systemic disease in the heart, kidneys, etc.

The cyanosis of the extremities shows remarkable variations with the temperature, a cold spell of weather bringing on the cyanosis at once, together with bullæ and mottling of the extremities. In appearance, in the early stages, the affection resembles chilblains, and for this reason it was decided to investigate the calcium metabolism of 10 patients. The ages of the patients

varied from 19 to 27 years, they were all stuporose and inaccessible and had been ill for from 4 to 9 years.

The estimations of serum calcium ranged from 8 to 14 mgrm.%, the average being 9.5. These estimations were within normal limits, even though they were on the low side in some cases, but there was no correlation between the calcium level and the degree of cyanosis present.

The patients were then given a series of 5 intra-muscular injections of 20 units of parathormone. This produced a slight rise in the serum calcium, the average rise being 2 mgrm., while the maximum was 3 mgrm. At the same time no change in the extremities was observed.

Following this, 6 intramuscular injections of 3 c.c. glucocalcium were given on alternate days. This is equivalent to about 4 c.c. of a 5% solution of calcium chloride. Again, only a small rise in the serum calcium, averaging about 1 mgrm., was noted, while again no change in the cyanosis was seen.

The fragility of the red cells and the viscosity of the blood were found to be normal.

The blood-pressure varied considerably from patient to patient, but was constant in each individual. The patients who showed the most marked degrees of cyanosis had blood-pressures of 95/55 mm. Hg and 140/95 mm. Hg respectively, while in the remaining patients it varied from 140/100 to 100/70 mm. Hg. There appears to be no constancy between the blood-pressure and peripheral cyanosis.

Krinsky and Gottlieb (1) investigated the venous pressures of schizophrenic patients and found they were similar to those of normal subjects, and they found no significant relationship between the peripheral cyanosis and the venous pressure level. Hoskins and Jellinek (2) found a more constant relationship of systolic and diastolic blood-pressures in schizophrenics than in normal subjects, and this suggested that their vasomotor responses to changing conditions are relatively sluggish.

The relation of the autonomic nervous system to the peripheral cyanosis is shown by the following case :

A girl, aged 21, in a state of schizophrenic stupor was admitted in 1929. The blood-pressure was 120/70, and she showed no physical disability, apart from cyanosed hands and feet. Four years after admission her feet became œdematous, showed red patches, and the toes were markedly discoloured, with a black spot on the third right toe. On April 30, 1933, because of impending gangrene, sections of the lumbar sympathetic nerves were removed on both sides. The feet, a few days after the operation, were normal, except that they showed postural cyanosis. Now, four years after the operation, the feet are quite normal, while the hands remain cyanosed and swollen.

Finkelman and Stephens (3) investigated the heat regulation in 50 schizophrenic patients, and found that they reacted to cold with a lower heat production than normal subjects, and that there was no continuation of an

increased metabolic response after exposure, as occurred in the normal group. This suggests itself as a possible factor in causing peripheral cyanosis, the obvious defect being in the autonomic nervous system.

From all the above-mentioned points, it would appear that the fundamental disturbance on the physical side in schizophrenia is a clumsiness of adaptive responses to changed conditions, and that these vasomotor disturbances are due to dysfunction of the organism, together with an inadequate autonomic nervous system.

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References.—(1) Krinsky, C. M., and Gottlieb, J. S., *Arch. Neur. and Psych.*, 1936, xxxv, pp. 304-309.—(2) Hoskins, R. C., and Jellinek, E. M. A., *Research Nerv. and Ment. Dis. Proc.*, 1933, pp. 14-211.—(3) Finkelman, I., and Stephens, W. M., *Amer. Journ. Psychiat.*, 1936, xcii, pp. 1185-1189.