corpus striatum, coupled with the dopamine D-1 receptor and also, evidently, for other dopaminergic receptors in the brain than typical neuroleptics. Consequently it may be expected that the use of these antiarrhythmic phenothiazine preparations will not be complicated by any significant neurotropic action or by any influence on peripheral dopaminergic receptors.

LITERATURE CITED


AMPHETAMINE STEREOTYPY AS A STABLE RHYTHMIC PROCESS

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Stereotyped behavior induced by large doses of amphetamine is a well known state at the present time that is widely used as a model of psychopathology and for screening psychotropic drugs [1, 2].

Stereotypy in different species of animals is characterized by an assortment of automatized actions (head turning, sniffing, licking, and so on). Their frequency characteristics and time course have not been adequately studied. Yet such an approach could be important for our understanding of the nature of mental disturbances. With this in mind, in the investigation described below some temporal parameters of stereotyped behavior were studied in detail for the first time in experiments on cats.

EXPERIMENTAL METHOD

Nineteen cats of both sexes weighing from 2 to 3.5 kg were used. Horizontal motor activity of the animals was recorded in a special chamber by means of an electromechanical rotameter of original design. To connect the cat's head securely to the mechanical part of the rotameter, the animal was anesthetized with ether and a socket was fixed to the vault of the skull. Head movements to right and left were recorded on a 4-channel N338-4P automatic writer and monitored visually.
Fig. 1. Rhythmic characteristics of amphetamine stereotypy. I) Dependence of frequency of stereotyped head turning on dose of amphetamine (mean results of 12 experiments on 10 cats). Vertical axis — number of turns, K) original frequency of movements in control; II) histograms of intervals between individual head turnings after different doses of amphetamine. Vertical axis — number of intervals (duration measured in seconds on the right) during 10 min of recording. Results on different days of experiment on cat No. 35; K) control, III) histogram of periods of fluctuations in frequency of movements in different phases of amphetamine stereotypy (results of one experiment on cat No. 33). Total number of movements, irrespective of direction, estimated per minute. Vertical axis — number of periods, their duration shown on right (in min). K) control; IV) time course of fluctuations in animal's activity (cat No. 31) after injection of physiological saline (a) and a standard dose (in mg/kg) of amphetamine (b–d) on different days of experiment. Total number of movements to left and right counted. Arrow indicates time of injection.

Fig. 2. Time course of correlation between number of head turns by animal (cat No. 35) to left and right after different forms of activation. Abscissa, time of recording (in min); ordinate, number of turns per minute. I) Comparison of natural activation after injection of physiological saline (a) and stimulating effects of caffeine, 20 mg/kg (b), and amphetamine in substereotyped dose, 0.25 mg/kg (c). Arrow indicates time of injection. II) time course of stereotyped movements and their increasing desynchronization after injection of increasing doses of amphetamine. Bold line shows time course of head movements to right, thin line — to left. Extrema in opposite phases joined by vertical broken lines, horizontal lines above indicate total duration of desynchronized episodes.

Amphetamine was injected intraperitoneally in one of the following doses: 0.25, 1, 2, 5, and 10 mg/kg. The animals' behavior was recorded immediately after injection of the psychostimulant and for the next 3–4 h. Experiments in which physiological saline and caffeine in a dose of 20 mg/kg were injected on the same schedule served as the control. All experiments were conducted under standard conditions (intensity of illumination, noise background, feeding, time of day) and with an interval of 2–3 days. The results were analyzed by Student's test (P < 0.05).