

EFFECT OF INTRAVENOUS BARBITURATE ON PERCEPTION

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and Morris B. Bender, M.D.

The effect of intravenous barbiturate on the perception of multiple simultaneous cutaneous stimuli was observed in large groups of normal subjects, patients with diffuse and focal cerebral disease, spinal cord lesions and psychogenic disorders.

Each was examined before and after the slow administration of 2 1/2% solution of sodium amytal in doses of 0.15 to 0.50 Gm. As nystagmus, slurred speech, ataxia and drowsiness appeared, the injection was halted and simultaneous tactile tests were applied. The examiner simultaneously touched the subject in two places - such as the cheek and the hand - and asked him to report what was felt. Tests were repeated with various body combinations, and the reports recorded. The effects of sodium amytal on modalities other than touch were also investigated.

In all subjects sodium amytal caused errors in the perception of the simultaneous stimuli. Normal subjects under the influence of the barbiturate frequently reported only one of the two stimuli (extinction); e.g., in the combination of face and hand only the stimulus to the face was reported. These errors were transient and fluctuated during the period of drug action. Similar behavior was noted in patients with psychogenic disorders (psychoneurosis, depression, schizophrenia).

In patients with cerebral disease, amytal brought out defects not previously apparent or exaggerated existing signs of dysfunction. In this group the errors were more pronounced, persisted for longer periods, and showed less fluctuation than in the normals. In patients with focal cerebral disease with sensory defects confined to one area of the body, amytal brought out errors which were not apparent even with simultaneous tests and it defined more clearly the extent of the sensory disturbance.

Patients with diffuse cerebral dysfunction who previously made no errors on simultaneous tactile tests, showed repeated errors of extinction and displacement on both sides of the body after small doses of amytal. Patients who showed extinction or displacement prior to the amytal performed differently after the drug was given. Errors became apparent in body parts which prior to the amytal were reported correctly. Furthermore, the phenomena of exosomesthesia (displacement to extrapersonal space), allosthesia (displacement to the opposite side) and partial displacement (incomplete ipsilateral displacement) were also evident. In all patients with organic mental syndrome the duration of the perceptual errors was frequently longer than the overt signs of drug action. The perceptual changes lasted longer than in normal subjects after similar doses and were more consistent.

In lesions of the spinal cord, the sensory defects became more apparent; extinction could be elicited over a larger area and the level of sensory defect became more distinct. In two

instances, however, a previously determined sensory level could not be elicited after the amytal.

In tests of other sensory functions, nystagmus on direct forward gaze was abolished during the period of drug action, and the concomitant visual disturbances (blurring and oscillopsia) also disappeared. Similarly, patients with tinnitus reported an abolition or diminution of this symptom after the injection of small doses of amytal.

Summary: Intravenous amytal was shown to alter the perception of simultaneous tactile stimuli in all subjects. There was an alteration in general perceptual function as well as the localized perceptual functions. Existing sensory dysfunction was exaggerated with the production of defects not previously apparent. These alterations in perception were similar to those following prolonged anesthesia or electroshock therapy. Intravenous barbiturate may be a useful adjunct in eliciting or exaggerating neural dysfunction, where routine examination yields equivocal results.

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Reprinted from
TRANSACTIONS
AMERICAN NEUROLOGICAL ASSOCIATION
1953

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NEW YORK

The effect of intravenous barbiturate on the perception of multiple simultaneous cutaneous stimuli was observed in large groups of normal subjects, patients with diffuse and focal cerebral disease, spinal cord lesions and psychogenic disorders.

Each was examined before and after the slow administration of 2½ per cent solution of sodium amytal in doses of 0.15 to 0.50 Gm. As nystagmus, slurred speech, ataxia and drowsiness appeared, the injection was halted and simultaneous tactile tests were applied. The examiner simultaneously touched the subject in two places—such as the cheek and the hand—and asked him to report what was felt. Tests were repeated with various body combinations, and the reports recorded. The effects of sodium amytal on modalities other than touch were also investigated.

In all subjects sodium amytal caused errors in the perception of the simultaneous stimuli. Normal subjects under the influence of the barbiturate frequently reported only one of the two stimuli (extinction); *e.g.*, in the combination of face and hand only the stimulus to the face was reported. These errors were transient and fluctuated during the period of drug action. Similar behavior was noted in patients with psychogenic disorders (psycho-neurosis, depression, schizophrenia).

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