Ventilatory difficulties also occurred more frequently with alphaprodine, but the differences were not significant. Although the incidence of these complications may seem relatively high, it should be remembered that every patient, without regard to age or physical condition, received a fixed initial mg/kg dose of one of the narcotics. Subsequent experience with more than 1,000 patients indicates that if the initial dose of narcotic is individualized according to age, physical condition and the presence of complicating pathophysiological factors, the incidence of apnea and/or ventilatory difficulties is significantly less.

The ratios of the settling and maintenance doses of meperidine and alphaprodine to fentanyl (see table 7) were not significantly different. This indicates that durations of the analgesic effects of the different narcotics are about the same. If this were not so, then the ratio of the maintenance doses, which in addition to analgesic potency also reflects duration of analgesia, should be significantly lower for the longer-acting drug than the ratio of the settling doses, which depends only upon analgesic potency.

In view of the seemingly similar durations of analgesic effects of the three narcotics, it is of interest that, judging from the state of consciousness at the termination of anesthesia (see table 8), the intensity and/or duration of the hypnotic effect of fentanyl was less than that of the other two narcotics. These findings suggest the possibility of a dissociation between duration of analgesia and the hypnotic effects of the three narcotics.

In conclusion, fentanyl and meperidine were found more suitable for the production of neuroleptanesthesia in conjunction with droperidol than alphaprodine. Except for the lower incidence of apnea and the more rapid recovery of consciousness at the termination of anesthesia, fentanyl does not seem to have any significant advantages over meperidine as a component of neuroleptanesthesia.

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Muscle

NEUROMUSCULAR TRANSMISSION The facilitation of the end-plate potential amplitude during low-frequency repetitive stimulation, and recovery of the already-facilitated end-plate potential after the termination of repetitive stimulation, were investigated by recording the intracellular end-plate potentials in magnesium-blocked nerve–muscle preparations of the Japanese frog. With brief repetitive stimulation, the amplitude of the end-plate potential increased almost linearly with time, and the rate of increase in the amplitude of the end-plate potential was an exponential function of the stimulation frequency. (*Maeno, T.: Analysis of Mobilization and Demobilization Processes in Neuromuscular Transmission in the Frog, J. Neurophysiol. 32: 793 (Sept.) 1969.*)