April 10, 1970

Dr. Jonathan O. Cole
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Dear Jon,

After your telephone call, I asked Dr. Volavka to check on the question of hyperbaric oxygen and EEG, and the following are his notes:

The literature deals basically with two aspects of the problem: oxygen convulsions and the therapeutic use of hyperbaric oxygen. The most recent work on convulsions (Harel, Kerem and Lavy, 1969), apart from asserting that the seizures have a random origin (at least in the rabbit), also provides a useful survey of the older literature.

Therapeutic hyperbaric oxygen effects on EEG were reported by Levy-Alcover et al., (1965), Marinchescu and Poilici (1966), and Goulon et al. (1968). In patients with cerebrovascular diseases, hyperbaric oxygen caused widely heterogeneous EEG changes (either some flattening, or an amplitude increase, or sharp elements) and this was interpreted as indicating that oxygen might have resulted in cerebral vasoconstriction in some cases. This would have accentuated any pre-existing hypoxia.

In London,iin 1966, a heterogeneous group of neurological patients convalescing from brain anoxia or injury were introduced in a hyperbaric chamber. I reviewed the records of 5 patients and in this inadequate aample, saw changes reminiscent of the initial stages of sleep - a lower of amplitude and slowing of dominant frequency.

The references are:

Harel, D., Kerem, D. and Lavy, S. The influence of high oxygen pressure on the electrical activity of the brain. Electroenceph. clin. Neurophysiol., 26: 310-317, 1969.

Goulon, M., Levy-Alcover, M., Nouailhat, F. and Dordain, G. The EEG in hyperbaric oxygen therapy. Electroencephl clin. Neurophysiol., 25: 90, 1968.

Levy-Alcover, M., Goulon, M., Nouailhat, F. and Augustin, P. EEG study of patients undergoing hyperbaric oxygen therapy: first results. Electroenceph. clin. Neurophysiol., 19: 608, 1965.

Marinchescu, C. and Poilici, I. Hyperoxic effects on the EEG background activity in cerebrovascular diseases. Electroenceph. clin. Neurophysiol., 21: 95, 1966.

I trust this is helpful.

Sincerely yours,

Max Fink, M.D.
Professor of Psychiatry

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