Trifluoperazine Pretreatment In Experimental CI Gerbils

To the Editor:

It has been well established that cyclic 3', 5'-adenosine monophosphate (cAMP) is elevated in the cerebral cortex following anoxia, ischemia, trauma, and decapitation, and in the cerebrospinal fluid (CSF) in experimentally induced cerebrovascular disorders, in patients with acute cerebral contusion and concussion, and in patients with stroke. Of the phenothiazines tested against a rise in cerebral cAMP, trifluoperazine most efficiently inhibited that rise, a dose of 20 mg/kg inhibiting the rise by nearly 100%. For that reason, we have tested whether trifluoperazine would also have a protective effect in gerbils with experimental cerebral infarction.

Trifluoperazine (20 mg/kg) in a buffer solution was given intraperitoneally to 31 animals 90 min before operation. Thirty control animals received an equal volume of the buffer solution and 42 control animals received no treatment. Infarction was produced by ligation of the left common carotid artery. The animals were evaluated every 8 hours for 88 hours in a double-blind manner.

In the trifluoperazine-treated group, 25.8% (8 of 31) had infarcts, a lower incidence than in the buffer-treated group, of which 63.0% (17 of 27) (p < 0.005) had infarcts and in the nontreated group of which 51.2% (21 of 41) (p < 0.05) had infarcts. Mortality was not significantly lowered in the trifluoperazine group, but the trifluoperazine-treated animals had a lower probability of dying than the nontreated animals (p < 0.05) at every 8-hour observation period and a lower probability of dying than the buffer-treated animals (p < 0.05) at 6 of the eleven 8-hour observation periods. Thus, we believe that trifluoperazine prevented the small, nonfatal infarcts that were seen in the control groups.

Since pentobarbital has been reported to inhibit elevations in cAMP and to offer a protective effect in experimental cerebral ischemia, and tophyllyline has been reported to lower mortality in experimental stroke, there may be a relationship between the prevention of an ischemia-induced rise in cortical cAMP and the lowering of morbidity and mortality in experimental stroke. Although trifluoperazine has not been used in the treatment of stroke, our results show that it provides a protective effect against cerebral ischemia similar to that seen with pentobarbital, and suggest a possible mechanism for pentobarbital protection.

John C. Sowers, B.A.
Medical Student,
Bowman Gray School of Medicine of
Wake Forest University

C. Patrick McGraw, Ph.D.
Associate Professor
Department of Neurology and
Section on Neurosurgery,
Department of Surgery,
Bowman Gray School of Medicine of
Wake Forest University
Winston-Salem, NC 27103

Non-Invasive Methods Defended as Valuable

To the Editor:

The editorial appearing in Stroke (9:427-429, 1978) by Dr. Burnton A. Sandok, levels unwarranted criticisms of non-invasive procedures for evaluation of the cerebral circulation. I believe...
Trifluoperazine pretreatment in experimental CI gerbils.
J C Sowers and C P McGraw

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