Letter to the Editor

Wernicke-Korsakoff encephalopathy and the endorphin system

Sir,

We read with interest the recent paper of Gibb *et al.* (1985) in which reversible coma in Wernicke's encephalopathy was reported. Treatment with thiamine was successful in that the patient regained consciousness but unsuccessful in preventing the residual amnesic defect of Korsakoff's encephalopathy. In a similar report (Wallis *et al.*, 1978) four comatose patients with the Wernicke syndrome also experienced improvement in their level of consciousness with thiamine administration. However, three of these patients died and one remained disabled despite thiamine administration, due to complications, some of which were related to Korsakoff's residuals. While the acute phase of Wernicke-Korsakoff syndrome has been attributed to a specific thiamine deficiency, the neurological basis of the specific regions of pathology in Wernicke's patients and the memory deficits and other residuals associated with Korsakoff's psychosis are yet to be fully explained. Thus, we speculate that another factor other than thiamine deficiency may be important in the pathophysiology of the Korsakoff syndrome.

The pathological lesions in Wernicke-Korsakoff syndrome involve areas rich in endorphin-containing neurones (Cuello, 1983). Furthermore, chronic ethanol intake is known to be associated with depletion of central nervous system endorphins as evidenced by reduced concentrations of opioid-like substances in the basal ganglia (Chernick & Craig, 1982) and beta-endorphin levels in cerebrospinal fluid (Borg *et al.*, 1982). Also endogenous opioids have been implicated in memory mechanisms (Izquierdo, 1982) and clonidine (a specific alpha-2 adrenoreceptor agonist which

may enhance endorphin activity) was reported to improve memory in Korsakoff psychosis patients (McEntee & Mair, 1980).

It is therefore conceivable that damage to endorphin systems may be the key factor in the pathophysiology of Wernicke-Korsakoff syndrome. The extent of damage to the endorphin system may dictate the degree to which the patient may recover or remain with the sequelae of Korsakoff's encephalopathy.

Robert Iacono¹, M.D.

Reuven Sandyk, M.Sc., M.D.

¹Department of Neurosurgery and

Department of Internal Medicine (Neurology)

The University of Arizona, Tucson AZ 85724, USA

References

- BORG, S., KVANDER, H., RYDBERG, U. TERENIUS, L. & WAHLSTROM, A. (1982). Endorphin levels in human cerebrospinal fluid during alcohol intoxication and withdrawal. *Psychopharmacology*, **78**, 101.
- CHERNICK, V. & CRAIG, R.J. (1982). Reduced leucine-enkephalin-like immunoreactive substance in hamster basal ganglia after long term ethanol exposure. *Science*, **216**, 1425.
- CUELLO, A.C. (1983). Central distribution of opioid peptides. *British Medical Bulletin*, **39**, 11.
- GIBB, W.R.G., GORSUCH, A.N., LEES, A.J. & YUDKIN, J.S. (1985). Reversible coma in Wernicke's encephalopathy. *Postgraduate Medical Journal*, **61**, 607.
- IZQUIERDO, I. (1982). Beta-endorphin and forgetting. *Trends in Pharmacological Sciences*, **3**, 455.
- MCENTEE, W.J. & MAIR, R.G. (1980). Memory enhancement in Korsakoff's psychosis. *Annals of Neurology*, **7**, 468.
- WALLIS, W.E., WILLOUGHBY, E. & BAKER, P. (1978). Coma in the Wernicke-Korsakoff syndrome. *Lancet*, **ii**, 400.