

# Biofeedback Therapy for Disturbed Patients

SIR,—For the past seven or eight weeks we (Team No. 3, Rampton Hospital) have been using biofeedback therapy on five of our disturbed female patients. The instruments used are (a) the Myophone (muscle tension), (b) galvanic skin response (G.S.R.) indicator and (c) the E.E.G. 90 (alpha and theta wave recorder).

We have at least four sessions per week with each patient lasting about 15 minutes. The first four or five weeks were devoted to relaxation with the help of the Myophone and G.S.R. indicator and for the past three weeks we have been pleasantly surprised with the apparent ease with which each of these patients voluntarily produces alpha waves. They are also adept at blocking alpha production. The voluntary production of alpha waves has a beneficial effect on the patient's mood. I know it is too early accurately to forecast the possible usefulness of the procedure but it appears to me that the combined use of the three instruments has immense potential in dealing with selected (female) patients who are subject to episodes of disturbed behaviour (self-mutilation etc.).

I am not unmindful of the beneficial effects of the patients' relaxation between sessions and, of course, the instruction, guidance, and counselling of the nursing staff during and between sessions. However, all patients voluntarily produce alpha waves and have spontaneously stated that this improves their mood. Certainly the general standard of their behaviour is improving. —I am, etc.,

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# Volume of Feeds for Infants of Low Birth Weight

SIR,—The balance studies performed by Dr. H. B. Valman and others (3 August, p. 319) on five infants of low birth weight certainly suggest that larger weight gains with high-volume feeds as opposed to low-volume feeds were due to growth rather than to water retention. These studies, however, were performed when all except one of the infants were at least three weeks old.

The accompanying table shows the gains in weight over the first three weeks of life of two groups of either premature or light-for-dates infants who weighed less than 2,100 g at birth. All were born between July 1973 and September 1974. Babies with post-natal problems such as infection or respiratory distress and those who had regurgitated high-volume feeds when offered were not included in the study. The 16 infants in group 1 were nursed in the special care baby unit of the Royal Free Hospital, London,

and were fed high-volume S.M.A. feeds by continuous intragastric milk drip after the manner of Valman.<sup>1</sup> The 17 infants in group 2 were fed low-volume S.M.A. feeds intermittently by nasogastric tube.

The results suggest that premature babies on high-volume feeds gain weight more slowly than those on low-volume feeds but that light-for-dates babies gain weight at a similar rate whether on high- or low-volume feeds. Therefore there would seem to be no advantage in exceeding a milk intake of 200 ml/Kg/day during the first three weeks of life.—I am, etc.,

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<sup>1</sup> Valman, H. B., Heath, C. D., and Brown, R. J. K., *British Medical Journal*, 1972, 3, 547.

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# Psychiatric Manifestations of Giardiasis

SIR,—The observation of psychiatric disturbances during *Giardia lamblia* infestation by Dr. A. A. Khan (16 November, p. 407) is interesting but does not justify the suggestion that the organism is causing meningoencephalitis. He is not correct in implying that *Entamoeba histolytica* may cause meningoencephalitis by direct invasion via the olfactory nerves. Cases of cerebral infection with *E. histolytica* are secondary and occur as a result of amoebae spreading from a primary infection of the gastrointestinal tract.<sup>1</sup> Primary amoebic meningoencephalitis is almost certainly a transnasal infection; the organisms responsible in man are *Naegleria spp.*<sup>2</sup> These differ from *G. lamblia* and *E. histolytica* in being facultative parasites. Their trophozoites can exist independently of the host in damp soil and water.<sup>3</sup>

While the infective stage of *Naegleria* is the actively-moving trophozoite it is the cyst of *G. lamblia* or *E. histolytica* which, on ingestion by the host, passes through the acid gastric contents and later releases the trophozoites which in the case of *G. lamblia*, infest the small, and in the case of *E. histolytica* the large, intestines.<sup>4</sup> If meningoencephalitis is suspected the C.S.F. should be examined rather than the E.E.G. Primary amoebic meningoencephalitis is diagnosed by the examination of fresh cerebrospinal fluid on a warm slide,<sup>1</sup> and if *G. lamblia* were causing a similar disease the characteristic trophozoites would be easily spotted.

The behaviour disturbances seen during giardiasis may be related to gastrointestinal disturbances. *G. lamblia* can apparently cause quite severe steatorrhoea, particularly in patients with immunodeficiency syndromes.<sup>5</sup> Withdrawal or aggressive behaviour can be features in the presentation of coeliac disease in children,<sup>6</sup> and there may be a link between the diarrhoea of giardiasis and

the behaviour disturbances. It is also worth remembering that metronidazole is not without side effects on the nervous system, particularly at high dosage,<sup>7</sup> and the improvement in E.E.G. observed in one of Dr. Khan's patients might have been due to withdrawal of the drug rather than cure of giardiasis. —We are, etc.,

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- 1 Symmers, W. St. C., *British Medical Journal*, 1969, 4, 449.
- 2 Carter, R. C., *Transactions of the Royal Society of Tropical Medicine Hygiene*, 1972, 66, 193.
- 3 Willaert, E., et al., *Annales de la Société Belge de Médecine Tropicale*, 1974, 54, 333.
- 4 Faust, E. C., Russell, P. F., and Jung, R. C., *Craig and Faust's Clinical Parasitology*, 8th edn., p. 64. Philadelphia, Lea and Febiger, 1970.
- 5 Ament, M. E., and Rubin, C. E., *Gastroenterology*, 1972, 62, 216.
- 6 McNeish, A. S., and Anderson, C. M., *Clinics in Gastroenterology*, 1974, 3, 127.
- 7 Goodman, L. F., and Gilman, A., *The Pharmacological Basis of Therapeutics*, 4th edn., p. 1152. London, Macmillan, 1970.

# Ethics and Halothane

SIR,—Professor J. P. Payne (30 November, p. 529) states that "no cause-and-effect relationship has yet been established between halothane and hepatic damage," and other correspondents rightly make the same point. Japanese suppliers of thalidomide also argued with truth (at that time) that no cause-and-effect relationship had yet been established between thalidomide and congenital abnormalities, and they continued to sell it. They are now regarded as having been reckless and are liable to heavy damages. Public opinion rightly expects doctors to take consideration of reasonable suspicion, and such suspicion has been raised against repeated halothane anaesthetics. A prospective trial in which patients receive repeated halothane when otherwise they would not might show that the chance of serious liver damage was higher in those patients. If it did, they would have been damaged by the trial. This would not be ethical. Professor Payne asks me to declare my interest. It is to prevent patients being damaged by a clinical trial.—I am, etc.,

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# Oral Cholecystography: A Sign of Gall-bladder Disease

SIR,—Oral cholecystography remains the method of choice for the radiological study of the gall bladder. The many causes of

Gains in Weight during First 3 Weeks of Life of Infants of Low Birth Weight

Infants	No.	Mean Gestation (weeks)	Mean Birth Weight (g)	Mean Milk Intake (ml/Kg/day) at end of:			Weight Gain (g) during:		
				Week 1	Week 2	Week 3	Week 1	Week 2	Week 3
					Group 1				
Premature	7	33	1,890	240	300	270	-115	+95	+260
Light-for-dates	9	35	1,880	235	300	280	-95	+195	+285
					Group 2				
Premature	8	32	1,700	180	200	195	-40	+120	+245
Light-for-dates	9	35	1,775	165	190	190	+5	+145	+245