ABNORMAL 24 HOUR PATTERN OF MELATONIN SECRETION IN DEPRESSION

SIR,—The secretion of melatonin, a pineal hormone, follows a 24 h rhythm in a wide variety of animals.[1,2] Studies in man, based on sensitive bioassays and radioimmunoassays have revealed high melatonin levels in blood and urine at night and low levels or none during the day.[3–6] It has been postulated that this 24 h rhythm is controlled by the suprachiasmatic nucleus located in the hypothalamus. Since recent studies have linked derangements of biological rhythm function with depression, we decided to investigate the temporal organisation of melatonin secretion in depressed patients and in normal subjects. Three unipolar and one bipolar depressed female patients aged 37–61 were studied. Plasma-melatonin concentrations were measured by radioimmunoassay during the pretreatment depressive phase and 4–6 weeks later during recovery, while the patients were on antidepressants. Blood was collected via an indwelling catheter, while the patients were on complete bed rest, for 24 h, samples being obtained hourly during the day and every 30 min at night. Lights were turned off from 10 P.M. to 7 A.M. and the patients were allowed to sleep during this time. The mean melatonin concentrations for the day and night in the four patients during depression and after recovery are shown in fig. 1. Values for normal subjects kept at complete bed rest with blood sampling every 20 min throughout a 24 h light-dark cycle are shown in fig. 2.

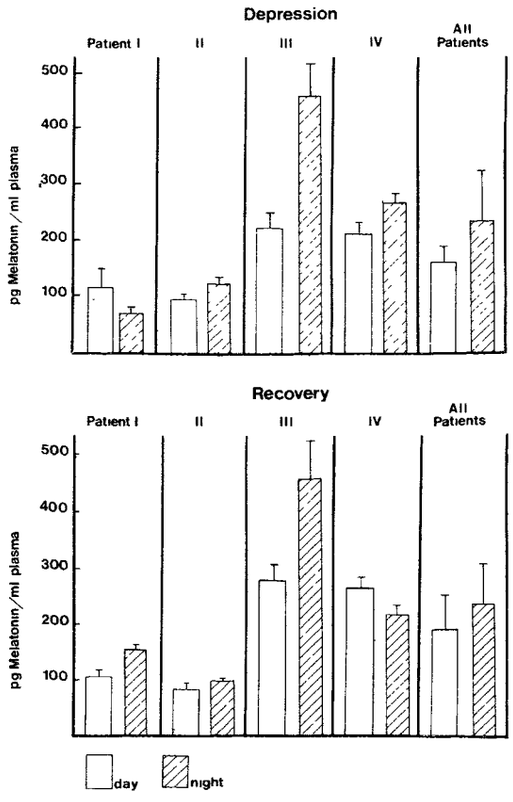

Fig. 1—Day/night plasma melatonin patterns before and after treatment for depression.

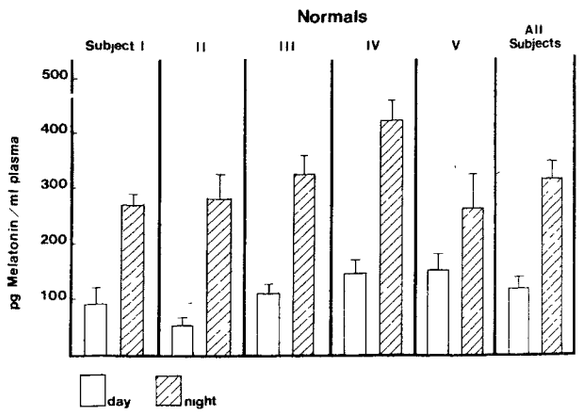

Fig. 2—Day/night plasma melatonin patterns in normal subjects.

The nocturnal melatonin increase found in normal subjects was essentially absent in three of the four depressed patients. The mean values and day-night differences were remarkably similar before and after treatment. These results support the concept of an altered biological rhythm in depressed patients and suggest that the abnormality is not readily reversed by treatment, despite clinical improvement.

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INCIDENCE OF MYELOID LEUKÆMIA IN LANCASHIRE

SIR,—Dr Geary and his colleagues (Sept. 15, p. 549) report that registrations of myeloid leukæmia in Lancashire during 1971-76 were about twice those in 1965-70, an increase of about 20 cases per year per million people. They imply that this might be the result of increases in the radioactivity of coastal waters and fish in North West England during the past 10–15 years.

The data supplied are not sufficient to establish a change in rate of registrations nor to establish whether or not the trend differs from that in the rest of Britain. However, even if the trend were real, it is most unlikely that any part of it is the result of increased discharges of radioactive waste to the Irish Sea.

We have calculated the radiation dose required to produce the doubling of incidence of myeloid leukæmia reported by Geary at al. The risk of radiation-induced leukæmia is estimated to be 20 cases per million people each receiving 1 rem (0·01 Sv) to their blood forming organs.[1,2] The mean latency is 10 years[1] and few cases are seen within 5 years of exposure.[3] We have assumed, therefore, that the appearance of radiation-induced leukæmia would be normally distributed about the mean latency of 10 years with 95% of the cases occurring between 5 and 15 years after exposure. To simulate the conditions that would result from increasing radioactive contamination of the environment we have assumed that the annual

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