8523 C

Diurnal Variation in Excretion Rate of Formed Elements in Urine in Hemorrhagic Bright's Disease.

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The enumeration and differential counting of the formed elements in the urine forms the basis of the most useful clinical methods for distinguishing the different types of Bright's Disease[1] and yields valuable information concerning prognosis.[2] The usual method consists in examining a fairly concentrated specimen of urine collected over 9 or 12 hours during the night.[1] Frequently it becomes desirable to examine specimens of urine over a shorter period and in the daytime, often without any particular precautions of diet. To this end the diurnal variation in the rate of excretion of the formed elements in the urine was made in 2 patients with hemorrhagic Bright's Disease. Two observations were made upon each of these subjects. They were both young adult males (case 1 was 28 years old and case 2, 20 years old). The specific gravity of the specimens (1.012-1.018) was frequently not so high as is desirable[1, 2] but this was compensated for in large degree by the prompt examination of the specimens shortly after they were voided. The formed elements were counted by the method devised by Addis.[1] Urine was collected over 2-hour periods from 6 A.M. to 10 P.M. and then the 8 hours night urine collected in a single specimen. In the first experiment on both patients they remained in bed all day while in the second experiment they were up and about during the day. The second experiments were made 5 days (case 1) and 2 days (case 2) respectively after the first ones. Both patients had a mild hypertension but no anemia or nitrogen retention. The renal function in case 1 was 60% and in case 2 about 45% of normal. Both patients were recovering from the initial stage[1] of hemorrhagic Bright's Disease.

The results in Fig. 1 (the significance of the various lines on the charts is indicated by the legends used in the ordinate scales, *e. g.,* the heavy continuous line is urine volume rate, etc.) show a considerable degree of uniformity in the several experiments. The greatest rate of urine excretion is always over the lunch period be-

[1] Addis, T., *J. Am. Med. Assn.*, 1925, **85**, 163.

[2] Addis, T., and Oliver, J., The Renal Lesion in Bright's Disease, P. B. Hoeber, Inc., New York, 1931, p. 9.

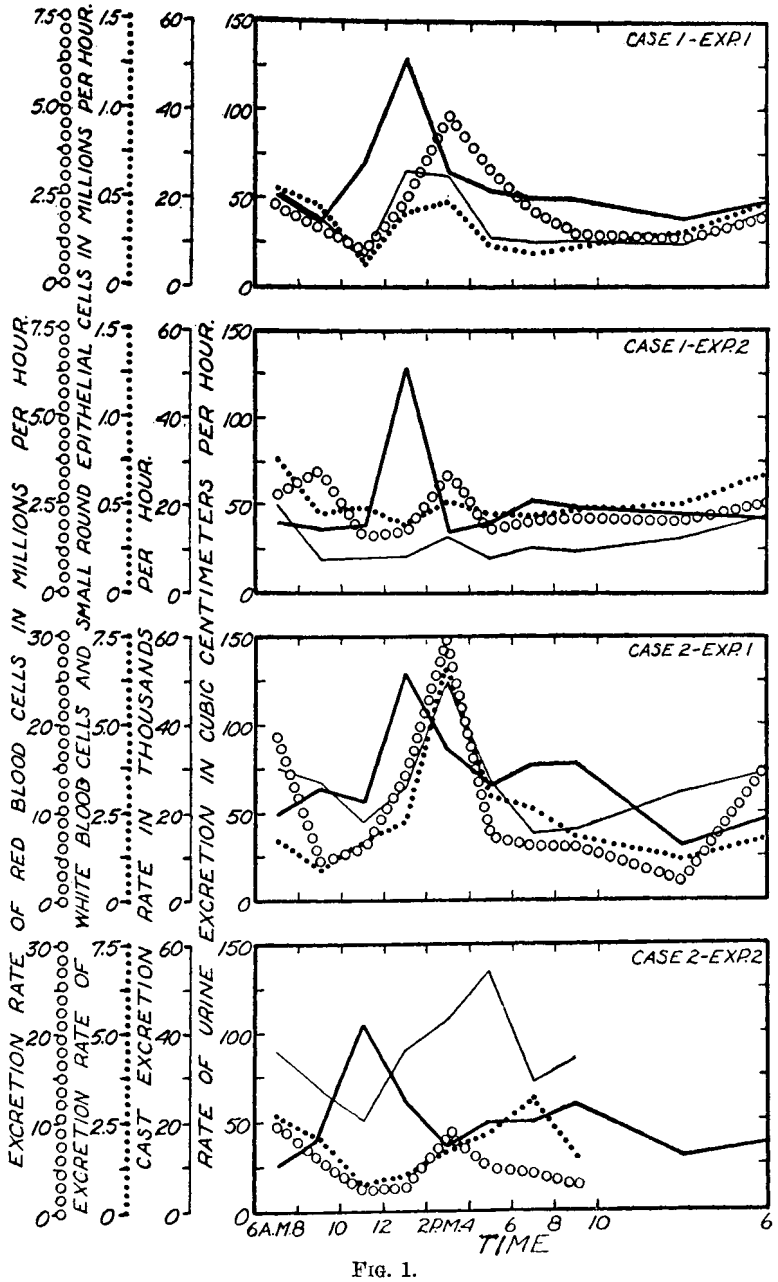

FIG. 1.

tween 10 and 12 A.M. The number of red blood cells excreted tends to be the highest and in all cases shows a peak of variable height during the 2 to 4 P.M. period. There is no available explanation for this. It bears no relation to the diurnal variation in

renal function.[3] The variations in the rate of excretion of leucocytes and epithelial cells (these are enumerated together because indistinguishable[1]) and to a lesser degree of casts (in both cases all the casts happened to be hyaline) were in general similar to those of the erythrocytes. The rate of excretion during the morning tended to be lower than at night followed by the mid-afternoon rise. During the late afternoon and evening as well as the night (with only an average observation between 10 P.M. and 6 A.M. we must guess at the latter) the rate of excretion of formed elements appears to be at a fairly steady level. As a practical point this would lend weight to the current practice of measuring the excretion rate of formed elements on the night urine whenever feasible quite apart from the fact that it is easier to obtain the desired urine concentration and acidity during the night with the least inconvenience to the patient. It should also be pointed out that from the experiments reported here it is obvious that the rate of excretion of the formed elements at any time of day if properly carried out would generally lead to the same conclusions about the patient for in spite of the considerable variations the number excreted tend to remain of the same order of magnitude.

8524 P

Measurement of Insulin Action.*

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The insulin required to maintain a normal blood sugar level in depancreatized dogs has been studied by Holm[1] and in the laboratories of Houssay[2] and Soskin.[3, 4] Holm and Houssay found that 0.01 unit insulin per kilogram of body weight per hour was necessary. Soskin found values as low as 1-175th unit insulin per kg. per hour in dogs under pento-barbital sodium (Abbott).

[3] MacKay, E. M., *J. Clin. Invest.*, 1928, **6**, 505.

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[1] Holm, *Arch. f. exp. Pathol. u. Pharmakol.*, 1927, **121**, 368.

[2] Houssay, B. A., Lewis, J. T., Foglia, V. G., *Compt. Rend. Soc. Biol.*, 1929, **101**, 241.

[3] Soskin, S., Allweiss, M. D., *Am. J. Physiol.*, 1934, **110**, 4.

[4] Soskin, S., Allweiss, M. D., Cohn, D. J., *Am. J. Physiol.*, 1934, **109**, 155.