CHLORPROPAMIDE IN DIABETES INSIPIDUS*

Report of a Case
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Diabetes insipidus of the central (neurohypophyseal) type is treated with replacement therapy by vasopressin. Its repeated administration as injections causes discomfort and anxiety, particularly in children, while other routes of administration are unsatisfactory. The drug, unfortunately, is not readily available in India. The introduction of thiazide derivatives marked an advance in the management of diabetes insipidus. Recently Ardunio et al. (1966) showed a beneficial action of the antidiabetic drug chlorpropamide in this disorder. Successful symptomatic management of diabetes insipidus with chlorpropamide in an eleven-year-old girl is reported here.

Report of a Case

S.B., an 11-year-old girl, was admitted on 19th January, 1970, to the All-India Institute of Medical Sciences Hospital, with the history of polyuria and polydipsia of 3 years' duration. She used to drink about 3-4 litres of water per day and had to go to the toilet several times during the night. These symptoms had started following a short febrile illness, lasting for 3-4 days, which was unassociated with headache and visual or neurological symptoms. The past and family history was insignificant.

Examination revealed a well-nourished young girl weighing 30 kg. with a height of 128 cm. Systemic examination was essentially unremarkable except that her bladder was palpable 3 cm. above the pubic symphysis even after voiding urine. The optic fundi were normal. Perimetry was also normal. Her fluid intake varied between 3-4 litres/day while the output was between 2.5-3.5 litres/day. The urine specific gravity varied between 1002 and 1004. The haemoglobin was 11.2 G.%, total and differential leukocyte counts were normal. Serum sodium varied between 140-142 mEq/litre while serum potassium varied between 4.2-4.5 mEq/litre. Fasting and postprandial blood sugar values were 80 mg.% and 92 mg.% respectively. Serum calcium was 10 mg.%, phosphorus 3.1 mg.% and alkaline phosphatase 15.0 K.A. units. Liver function tests were normal. Intravenous pyelography showed a distended bladder with dilated ureters on both sides. An X-ray of the skull was normal.

Following water deprivation for 18 hours, during which the child lost 1.7 kg. in weight, the urine specific gravity remained at 1004. During a hypertonic saline infusion (Carter and Robins 1947) there was no change in the urine flow and urine specific gravity. On administration of 5 units of Pitressin tannate (Parke-Davis and Co.) subcutaneously the
24-hour urine volume came down to 500 ml. and the specific gravity rose to 1020. The child was administered 375 mg. of chlorpropamide daily before breakfast. The daily urine output was reduced by about 60% and there was a significant rise in urine osmolality. Both of these returned to the pretreatment values on withdrawal of the drug (Fig. 1). She was advised to take 375 mg. of chlorpropamide daily. She has been followed for the last one year, during which the symptomatic improvement has been maintained. No symptoms of hypoglycaemia or drug toxicity were seen and he blood sugar values have been normal.

**Discussion**

The patient presented herself with vasopressin sensitive diabetes insipidus for which no apparent cause was found. Chlorpropamide administration resulted in a reduction of urine volume with an increase in urine osmolality. The delay in the peak antidiuretic action was presumably because of oral administration of the drug. The antidiuretic effect of chlorpropamide in pitressin deficient patients is now well established (Vallet et al. 1970) but the mechanism of antidiuresis remains unknown. A decrease in urine output along with a rise in urine osmolality to values slightly more than that of plasma can be achieved by an extreme reduction in glomerular filtra-

![Fig. 1. The effect of chlorpropamide on the urine volume and urine osmolality.](image-url)