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MEDICAL MANAGEMENT OF ADDISON'S DISEASE

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I. Addison's Disease Is a terra we use when the adrenal gland has been destroyed. It is another form of adrenal insufficiency when the pituitary doesn't work.

A. The Adrenal cortex produces three main classes of hormones.

1. Cortisol....the glucocorticoid hormone. This part is directly under the influence of the pituitary gland and ACTH.

2. Aldosterone....a mineralocorticoid hormone. Production of this gets 15% stimulus from the pituitary and the rest from renal mechanisms.

3. Gonadal Steroids.

B. Treatment for Addison's disease requires two basic things, 1st the replacement of Cortisol and 2nd the replacement of Aldosterone. "There are many ways to skin a cat. What I have to tell you is my philosophy. If you are being managed differently it's not necessarily wrong...it's just different!"

II. Cortisol is the prototype glucocorticoid hormone.

A. There are two drugs which resemble cortisol almost exactly. They both also have mineralocorticoid properties. "In my practice, I use mostly hydrocortisone and cortisone acetate. Sometimes I find a person who doesn't require florinef. I can't predict that, I just have to learn it. You learn it because on the Florinef the person has increased blood pressure, swelling of the hands and feet, increased weight. You titrate by cutting the florinef gradually until these symptoms disappear."

1. Hydrocortisone is the more potent of the two.

- The usual maintenance dose is 30-40 mg/day, 2/3 dose given in the AM and 1/3 dose in the PM.

- This follows the normal diurnal pattern of the body.
- Between 2 and 5 AM the pituitary secretes maximum amounts of ACTH resulting in stimulation of the adrenal gland and the highest cortisol levels around 10 AM.

2. Cortisone Acetate Is a little less potent than hydro-cortisone.

- The usual dose is 25-37.5 mg/day.
- It is also usually given in divided doses.

B. There are several other drugs that fall into the glucocorticoid category and can be used instead of hydrocortisone or cortisone acetate. The real difference is that they have virtually no mineralocorticoid properties.

1. Prednisone is about 5-7 times more potent than hydro-cortisone.

- The usual maintenance dose is 5-10 mg/day.
- It Is longer acting and can usually be given once/day.
- It is significantly cheaper than hydrocortisone or cortisone acetate.

2. Prednosolone is a little weaker than prednisone and about 4 to 6 times more potent than hydrocortisone.

3. Dexamethasone is incredibly potent, about 40 times that of hydrocortisone.

III. Aldosterone is the prototype mineralocorticoid hormone.

A. Florinef is the drug used to replace aldosterone.

1. It is a salt retaining hormone. It regulates Blood pressure by retaining sodium in the body. Water is passive and follows the sodium.

2. The normal dose is 0.1 mg/day.

3. It has a side effect of decreasing potassium in the body.

B. Symptoms of too little aldosterone require an increase in florinef. These Include:

1. Decreased blood pressure

2. Orthostatic hypotension (dizziness/blacking out on standing.)

3. Craving salt

IV. In monitoring a patient you have to be able to distinguish symptoms of adrenal insufficiency from problems with similar symptoms. "There are a lot of symptoms of

adrenal insufficiency that are characteristic when you are first diagnosed. But people with Addison's don't own these symptoms, you share them with the rest of us."

A. Hydrocortisone and Cortisone Acetate allow for closer monitoring because of two laboratory tests that can be used.

1. Urine free cortisol levels quantitate the amount of metabolized cortisol released into the urine.

- Urine is collected for 24 hours.
- Normal values are (9-45 fjg/24hr) for women and (7-44 pg/24hr) for men.
- If a patient's values are low, he/she would require an increase in glucocorticoid replacement. If they are high or within normal limits, the symptoms are NOT due to under medication.
- **YOU CANNOT DO THIS TEST WITH PREDNISONE** The reason for this is that prednisone is metabolized differently.

2. Serum ACTH levels are done at the same time as the test above.

- The result of BOTH tests need to be looked at together.
- Sometimes elevated ACTH levels take years to come down.
- When the body needs more glucocorticoid hormone, the pituitary gland produces more ACTH, attempting to stimulate the adrenal gland.
- Normal ACTH levels are less than 100 pg/ml.

3. "In my practice I have patients on varying amounts of hydrocortisone or cortisone acetate depending on the numbers I have obtained through the years. It helps me to individualize care as much as possible.

B. There Is no definitive test to determine if mineralocorticoid doses are correct.

1. Adequacy is looked at with old fashioned medicine.

- What is the blood pressure reclining and standing?
- What is the heart rate reclining and standing?
- Is the patient edematous?

2. There are a few lab tests that can be checked.

- Serum electrolytes may show an increased potassium and a decreased sodium if more florinef is needed.
- The BUN may be elevated, the creatinine may be elevated and the BUN/CR ratio may be increased.

V. One of the most common causes of Addison's Disease is autoimmune.

A. There is a genetically effected phenomena where by the patient develops autoimmune end-organ failure or end-organ Insufficiency.

1. The most common autoimmune disorder Is Hashimoto' s thyroiditis, followed by diabetes mellitus, then Addison’s Disease.

2. Also In this category are premature menopause and pernicious anemia.

3. Schmitts Syndrome refers to patients who have a grouping of these diseases, namely diabetes, thyroiditis, and Addison's Disease.

4. "About 10-15% of my patients with Addison's Disease have, or have had, other autoimmune disorders. I monitor all of them for other symptoms."

- Antibodies to the thyroid and to the islet cells in the pancreas can be checked.
- Blood glucose levels will tell what the blood sugar is now. Glycohemoglobin tells if the blood sugar has been elevated in the past 2-3 months.

Addison's Disease Medical Book

“I do not know of any good medical book written recently that is simply devoted to Addison's disease. The best way to look this up In a medical book is to see one of the current textbooks of endocrinology, especially Williams or Felig. Each one has an excellent chapter on Addison's disease."

Paul Margulies, M.D.

Ed. note: The books referred to are: *Williams Textbook of Endocrinology*, seventh edition, edited by Jean D. Wilson and Daniel W Foster. Philadelphia, Q.B. Saunders company, 1985, pp 844-858.
Endocrinology and Metabolism, second edition, edited by Philip Felig, John D. Baxter, Arthur Broadus, and Lawrence A. Frohman.
