

THE POSTURAL BLOOD PRESSURE METHOD OF EVALUATING ADRENAL HYPOFUNCTION

Paper written by D. C. Ragland, M.D., Los Angeles, California, 1920

S U M M A R Y

WHAT IT IS A screen-test for hypoadrenia accomplished by measuring the body's ability to compensate for the hydrostatic effects of gravity

WHAT IT MAY INDICATE Hypofunction of the adrenal glands:

- a. Cardio-vascular efficiency
- b. Objective method of diagnosing the *asthenic syndrome*:
weakness
dizziness
chronic fatigue

PHYSIOLOGICAL BASIS The splanchnic veins, being devoid of valves, are dependent upon nerve function for their tone.

The tone of the splanchnic nerves is under the control of the adrenal system, THEREFORE:

Weak splanchnic veins mean
Weak splanchnic nerves, hence
Weak adrenals

CLINICAL METHOD The systolic blood pressures are compared between two different readings:

- a. One taken in recumbent position, and
- b. One taken in erect or standing position.

In the normal, the systolic blood pressure is some 4 to 10 mm. **higher** in the standing position than it is in the recumbent.

If, however, the blood pressure is **lower** in the standing position, hypoadrenia may be suspected. We have observed a drop of as much as 40 mm. and it is our experience that the degree of drop is proportionate to the degree of hypoadrenia present.

CONCLUSION Often this simple screen-test may be all that is needed to indicate the hypoadrenia syndrome. The test requires but little extra office time. It is also useful in evaluating the **results** of treatment.

A Prize-Winning Paper

The Postural Blood Pressure Method Of Evaluating Adrenal Hypofunction

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1. Adrenal Hypofunction in Everyday Practice The patient with adrenal hypofunction as seen in everyday practice is not necessarily a case of Addison's Disease, but the common conditions unquestionably suggest an adrenal basis.

Many of the more pronounced cases come complaining of weakness, among other things. BUT, HOW ARE WE TO KNOW **OBJECTIVELY** THAT THEY ARE WEAK?

In these cases, determine the POSTURAL BLOOD PRESSURE (in recumbent and in the erect positions) and you will be surprised many times at the great difference in the systolic figures.

2. Physiological Basis In the normal, the systolic blood pressure is some 4 to 10 mm. higher in the standing or erect position than it is in the recumbent position. This is due to the ability of the body mechanism to over-compensate for the hydrostatic effects of gravity. If in this way differ from veins of the extremities. The strength of the splanchnic veins is dependent upon the quality of the nerve tone, for any muscle is weak in proportion to the weakness of its nerve tone. If the nerve tone is weak, the vein wall is weak and cannot compensate for the effects of gravity. Hence the drop in systolic blood pressure in the erect position as compared with the recumbent position. The splanchnic nerves are controlled by the adrenal system; therefore, weak splanchnic veins mean weak splanchnic nerves and **weak adrenals**.

3. Studies cited Hill(1) found that anything that weakens the splanchnic vasomotor mechanism interferes with compensation. Sewall(2) has shown that persons in whom there is an excessive gravitation of blood to the lower limbs and splanchnics are physically weak, nervously unstable and frequently suffer from headaches and dizziness in the erect position. Schneider(3) utilizes postural systolic blood pressure determinations in rating the cardiovascular efficiency of men in air services. Crampton(4) has shown that the systolic pressure falls in the erect position in people weakened by dissipation, overwork, loss of sleep or disease.

4. Subacute Hypoadrenia Among the subacute cases, we find those following severe illness associated with fever, such as typhoid, influenza, pneumonia, ect., also, anesthesia, alcoholism, prolonged worry (which is in fact really excessive mental work), focal infections and intoxications.

A recent case will serve to illustrate the pronounced adrenal depression which may be caused by worry: Mrs e.J.W. had been feeling very dizzy and weak for ten days.

She complained of her head "feeling queer". Systolic blood pressure was 128 recumbent, 100 erect. Urine and physical examination negative, Adrenalin chloride solution 1:1000, 10 drops every 2-1/2 hours was given by mouth. Next day, July 14th 1920, recumbent 120, erect 110; July 15th 1920, recumbent 116, erect 116, systolic blood pressures. The patient said she felt fine.

5. Focal Infection Case

The effect of focal infection upon the activity of the adrenals is nicely shown by the following case history: and old man, age 70, was seen a year ago with Dr.

J>R> Perry, found some pus teeth and advised their removal. This was done and in two weeks the blood pressure fell to 136 mm. systolic, but at the same time he developed "spells" lasting 10 to 15 seconds. These spells were always preceded by a "chewing movement" of the face and jaw muscles. Jacksonian epilepsy was suspected by the attending physician.

The systolic blood pressure was now 136 recumbent, but was only 100 erect. Sergent's white line (note: this method outlined below) was also present. Adrenal hypofunction was my diagnosis. I reasoned that the toxins from the pus teeth had served to irritate and stimulate the adrenals; when these toxins were no longer formed the excessive stimulation ceased and there was a depression following. Adrenal gland with thyroid, spermin and calcium glycerophosphate were given, with prompt recovery and return to ranch life by the patient in about one month.

6. Hypoadrenia and The Chronically Ill

The term "neuro-circulatory asthenia" is good as far as it goes, but is it not really hypoadrenia? Often I have been confronted by people who say to me, "What is the matter with me? I'm not worth anything! My doctor tells me there is nothing the matter with me, but I know there is." Anyone doing much work with these Chronically ill, those who are not sick enough to be in bed, but at the same time are not well enough to efficiently perform their daily tasks. Their chief complaint is that they do not feel

Sergent's "WHITE ADRENAL LINE" - a dermatographical reaction was described as "la ligne blanche surrenale" by Emile Sergen, of Paris (Endocrinology, 1917, i,p. 18), upon which a convenient test is based.

The test consists of lightly stroking the skin over the abdomen with a blunt instrument such as a fountain pen. A positive reaction consists of the appearance of, within a few seconds or not more than half a minute, of a pale line or band following the course of the stroking. Gradually this becomes more distinct and extensive, so that eventually the line exceeds in size the actual area stroked. The white line attains its maximum clearness in about a minute and persists for two or three minutes before gradually disappearing.

This, at least, is what is to be expected in well-defined cases of adrenal insufficiency - the only instance in which the test has any real value. This sign does not always occur in every case, and is therefore of only supplementary diagnostic value.

. . . . from Harrower's "Practical Endocrinology" p. 255

well. I distinctly remember a prominent business man who had the "flu" in 1918. He consulted several doctors about his condition and was advised to "take a trip and forget it!" He took the trip, but was not benefitted. Then his own doctor told him "he was lazy".

Hic complaint was about like this: he arose and felt fairly well, breakfasted and went to his work. By noon he was tired, by 3 p.m. he was fairly tired, and by 6 p.m. he was "all in". After dinner he had no desire for reading, dancing, cards or theater; the only thing he wanted to do was go to bed. This he did by 8:30 or 9 p.m. and then he would lie awake until 1 or 2 a.m. before he could go to sleep. Examination showed no organic disease.

Blood pressure recumbent was 132, erect 118 mm. systolic, November 13, 1919. Small doses of adrenal gland with thyroid, spermin and calcium glycerophosphate were given daily. Finally on January 15th 1920 he called me up and said, "I think you had better give me the once-over doctor". When he came in, his systolic pressure was 118 in the recumbent and 118 in the erect positions. I remarked that he ought to feel fine. He then said, "If people only knew what these capsules would do for them, they would be fighting for them with guns."

7. Acidosis Case History I wish to relate my experience with a case seen with Dr. B>G> Pinkerton of Los Angeles. In August, 1918, D>R>, age 18, on Monday night suddenly developed a fever of 104 degrees, which by Tuesday noon subsided to 97 degrees. The boy was delirious continuously from the onset. Tuesday afternoon he began to vomit and had involuntary urination and defecation. One consultant suggested an early tuberculous meningitis; another suggested thrombosis of the lateral sinus, or perhaps a brain abscess. Wednesday morning brought no change. At 9 a.m. Wednesday I saw the patient and found the above condition, with a temperature of 97 degrees, pulse 140, systolic blood pressure 90 mm. The urine contained both albumin and casts, with plenty of acetone.

My diagnosis was acute adrenal exhaustion from the acidosis. Adrenalin chloride and Kalak Water were given by mouth with a solution of bicarbonate of soda and sodium chloride by rectum, by the Murphy Drip method. This regime soon changed the whole picture. By 5 p.m. the pulse was 110, the systolic pressure was 100 mm., with the cessation of the vomiting and lessening of the delirium. The next morning the pulse was 76, systolic pressure was 120, temperature 98.6 and the boy wanted to go home. If that boy had been anesthetized and an operation performed for sinus thrombosis, what chance would he have had for recovery?

8. The Relation of the Mineral Metabolism. The subject of acidosis is closely allied to demineralization. The adrenals, and, in fact, all the ductless glands, must have the proper amount of the proper mineral salts in the plasma for their perfect functioning. Hypoadrenia, the, also means demineralization, *and adrenal feeding will not accomplish much unless we supply these mineral salts.* Steeman(5) has shown, by using the method of De Waard, that the calcium content of the blood is low in neuroses of the vegetative nervous system, universal asthenia, and tuberculosis; and that the severity of the condition is reflected in the lowness of the blood calcium content and that the calcium content rises as the condition improves.

9. Possible Causes of Acute Hypoadrenia

In the acute cases there has been either of the following:

- a. Violet injury
- b. Severe hemorrhage
- c. Overwhelming infection and intoxication
- d. Severe psychic shock
- e. acute acidosis

10. Suggested Procedure

The treatment of hypoadrenia, whether it be acute, sub-acute, or chronic should be as follows:

1. Support the adrenals by adrenal feeding instead of whipping them with strychnine.
2. Spare them by removing focal infection and combating intoxication.
3. Supply the mineral salts as found in the blood stream, especially calcium (this can be done by administering the various salts in definite amounts).
4. Insist upon a diet rich in foods containing bases, with a minimum of foods that produce acids.

11. Bibliography

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