105 - 32 Royal Vista Dr NW
Calgary, AB T3R 0H9
Website: www.rmalab.com

Phone: 403-241-4500
Fax: 403-241-4501
Email: info@rmalab.com

Advancing the Science of Wellness
Rocky Mountain Analytical

Collection Date: 26-Oct-2013
Collection Time(s): 8:30 am
Sample Received: 01-Nov-2013
Reported On: 28-Nov-2013

Saliva Hormone Test

Accession Number : 111111

Provider:

Client:
Jane Doe

Phone:

Age: 50
DOB: 01-Jun-1963
Gender: F
Status: Irregular
Cycle Day: 50

Phone:
Fax:

Hormone	Status	Result	Range	Units	Range Applied
Estradiol	Low end of range	1.7	1.0 - 9.0	pg/mL	Irregular menses 50-63 years old
Progesterone	Below range	29	50 - 250	pg/mL	Irregular menses 50-63 years old
Testosterone	Low end of range	21	15 - 45	pg/mL	Endogenous testosterone > 30 yrs
DHEAS	Within range	6.3	2.0 - 7.5	ng/mL	Endogenous DHEAS 55-64 years
Cortisol AM	Within range	5.0	2.0 - 11	ng/mL	Sampled within 1 hour of waking

Hormone Therapies	Last Used

George Gillson MD, PhD
Medical Director

* Indicates symptom left blank.

The patient indicates that it has been more than 35 days since the start of her last menses, but she also indicated that she is menstruating (regularly or irregularly). Progesterone late in the cycle, or in an anovulatory cycle is expected to be less than 50 pg/ml. This patient most likely had an anovulatory cycle. This is quite common when androgens (testosterone and DHEA(S)) are high and is also more common over the age of 50.

The patient indicates some problems with sleep. Recognize that there is an optimum range for bedtime cortisol. If bedtime cortisol is too low, there is some evidence that normal sleep architecture is not established (insufficient REM sleep). Conversely, high bedtime cortisol is suppressive for melatonin, and may result in difficulty initiating and sustaining sleep. It may be worth looking at the cortisol profile via saliva, depending on the severity of the situation.

The patient is between the ages of 50 and 63, yet she is still having menses. Sampling took place at least 15 days after the start of her last menstrual period (or this was assumed, if the start date of her last menses was not listed). In many cases like this, the bleeding is anovulatory, but the fact remains that some women do have ovulatory cycles well into their 50's and very occasionally, into their early 60's. For this reason, the midluteal ranges were selected for estradiol and progesterone. Note that continuance of menses well past the age of 50 is associated with an increased risk of endometrial cancer.
(http://www.womenshealthmatters.ca/centres/cancer/endometrial/index.html)

Strictly speaking, vasomotor symptoms including hot flashes and night sweats reflect sympathetic nervous system (SNS) instability. Hence these symptoms are dependent on many factors such as stress, brain chemical levels (T3, serotonin, norepinephrine, melatonin, GABA, progesterone, estradiol and cortisol), and HPA axis function. They are not "pure" symptoms of estrogen deficiency (Prior J. Endocrine Rev 1998;19:397-428), and in fact, these symptoms may co-exist with symptoms of estrogen dominance. Vasomotor symptoms can be seen with many different patterns of hormone imbalance, such as low progesterone, low testosterone, low or high DHEAS, high estradiol, high cortisol. (Note: A one year trial of progesterone cream demonstrated efficacy compared to placebo, for the control of vasomotor symptoms (Leonetti HB, Longo S, Anasti JN. Transdermal progesterone cream for vasomotor symptoms and postmenopausal bone loss. Obstet Gynecol. 1999 Aug;94(2):225-228).) Excessive use of progesterone (higher dose or unbroken daily usage) can also result in vasomotor symptoms by downregulation of estradiol receptors.

Various studies published since 2001 indicate that a substantial percentage of patients given T4 with dose regulation according to serum TSH measurements (>50% in some studies) continued to experience significant hypometabolic symptoms, as well as ongoing depression and anxiety (Clyde P et al. JAMA 2003;290:2952-2958, Saravanan P et al. Clin Endocrinol (Oxf) 2002;57:577-585, Sawka A et al. J Clin Endocrinol Metab 2003;88:4551-4555, Walsh J et al. J Clin Endocrinol Metab 2003;88:4543-4550). In other words, the "gold standard" serum TSH measurement, does not appear to be an adequate way to monitor thyroid hormone therapy in some patients supplementing only with T4. The serum TSH level reflects conversion of T4 to T3 within the brain, not the peripheral tissues. Both the brain deiodinase enzyme (which converts T4 to T3) and the brain T3 receptor, are different from the deiodinase enzymes and T3 receptors found in other tissues. Hence the TSH level may not adequately reflect whether or not peripheral tissues have adequate amounts of T3, in all cases, when T4 is the only thyroid hormone being given.

For the purposes of this interpretation, symptoms commonly associated with low estradiol include vaginal dryness, depression, memory lapses, bone loss and incontinence. Taken as a group, these symptoms are not prominent, although one or more might be present to some degree. Vaginal dryness is often present even when other symptoms of low estradiol are not prominent. As always, clinical judgement should prevail over test results. If low estradiol symptoms develop or worsen, the situation should be reassessed.

An April 2008 analysis of symptom patterns in postmenopausal women reveals a sharp increase in symptoms commonly associated with low estradiol, when estradiol falls below about 1.8 pg/ml. So even though an estradiol level below 1.8 pg/ml is still considered to be within the "normal" range for postmenopause, it is probably suboptimal, and symptoms of low estradiol will tend to be much more pronounced for this group of women. (Low estradiol symptoms include depression, "brain fog", vaginal dryness, low sex drive and bone loss, although not all these symptoms will be present in every individual.) This same comment is probably also applicable to women in their late 40's, even though they might still be having menstrual cycles.

All other considerations aside, the ratio Pg/E2 is 17 for this patient. Regularly cycling women sampled in the midluteal phase generally have a ratio between 23 and 57. A lower ratio may indicate a relative deficiency of progesterone, even if the progesterone level is normal or higher than normal. If the sample was taken in the follicular phase, this comment is not applicable.

Hair loss is a prominent symptom. Hair loss is often associated with high androgens, but there are other causes. Hair loss may also associated with decreased delivery of T3 to tissue. If the testosterone and DHEAS levels in saliva are low or normal in the face of hair loss, questioning about other signs and symptoms of decreased delivery of T3 to tissue should be undertaken. Chronic hair loss is also associated with iron deficiency. One of the first blood tests to become abnormal when iron is deficient is serum ferritin. Low ferritin-associated hair loss is well recognized. Some toxic or potentially toxic metals (arsenic, selenium, thallium) can also cause hair loss. A trace element analysis of hair can be helpful to detect metal toxicity.

Low or low normal bioavailable testosterone may be associated with decreased sex drive, fatigue, depressed mood, decreased enjoyment of life and vaginal dryness, as well as bone loss. It may accompany anovulatory cycles and/or irregular bleeding in premenopausal women. It may be accompanied by low DHEAS in women of any age. It may be worthwhile considering supplementation with testosterone, depending on clinical details such as age, menstrual status or gynecological surgical history, but as always, this decision is between the patient and her health care providers. Since testosterone is an important hormone for maintaining bone density, it may be worthwhile to monitor bone density in the face of low/low normal testosterone.*

DHEAS is within the normal range for the patient's age, but this may not be an optimal level for this patient. Bear in mind that for reference, in healthy individuals less than 25 years of age, the normal range for DHEAS is 6 to 18 ng/ml for women, and slightly higher than this for men. Note that some some women less than 35 years of age, whose DHEAS is toward the upper end of their normal range might have complaints such as oily skin or facial hair growth.

RMA database analysis (February 2008) indicates that a normal first morning cortisol sample is not predictive of normal cortisol levels throughout the rest of the day. The morning point is, in a sense, "disconnected" from the rest of the day in this case, and symptoms will tend to correlate much better to the noon, suppertime and bedtime cortisol levels.

It is still worthwhile measuring the morning point as a screen, because in contrast to a normal finding first thing in the morning, a low morning cortisol is usually predictive of low cortisols throughout the rest of the day. Also, the ratio of morning cortisol to morning DHEAS, C/DS, has been well characterized in saliva as a function of age, so it is sometimes helpful to compare the patient's ratio to age-appropriate norms.

Morning cortisol is normal and symptoms which might suggest any significant problems with cortisol throughout the rest of the day are not prominent.

The ratio C/DHEAS is 0.80. This ratio normally increases with age. Based on a large in-house analysis of more than 15,000 samples at ZRT Laboratory in Portland, the ratio at age 20 is approximately 0.6; at age 45 it is 1.0; at age 60 it is 1.5 and at age 75 it is 2.3. This is because DHEAS declines with age whereas morning cortisol stays the same or increases slightly. If the ratio is higher than expected, based on the patient's age, this may be indicative of unbalanced adrenal function (cortisol too high or DHEAS too low). Factors which can contribute to imbalance include acute or chronic stress, obesity, metabolic syndrome/diabetes, and hypothyroidism. If the ratio is lower than expected for age, and DHEAS is within normal limits, this may simply be an indicator of healthy aging (i.e. preservation of DHEA output with age); however, a lower-than-expected ratio for age may also be due to low cortisol, high DHEAS, or both.

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Note: The College of Physicians and Surgeons of Alberta considers saliva hormone testing and some forms of bio-identical hormone replacement to be complementary medicine. The interpretation comments have not been evaluated or approved by any regulatory body. Commentary is provided to clinicians for educational purposes and should not be interpreted as diagnostic or treatment recommendations. *General treatment suggestions can be found in the Rocky Mountain Analytical Resource Binder.