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 Chairman & Consultant Pathologist

Dr. Yugam Chopra
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 CEO & Consultant Pathologist

NAME	: Mr. SHYAM MAKKAR	PATIENT ID	: 1627843
AGE/ GENDER	: 62 YRS/MALE	REG. NO./LAB NO.	: 012409280014
COLLECTED BY	: SURJESH	REGISTRATION DATE	: 28/Sep/2024 09:38 AM
REFERRED BY	:	COLLECTION DATE	: 28/Sep/2024 10:26AM
BARCODE NO.	: 01517858	REPORTING DATE	: 28/Sep/2024 06:38PM
CLIENT CODE.	: KOS DIAGNOSTIC LAB		
CLIENT ADDRESS	: 6349/1, NICHOLSON ROAD, AMBALA CANTT		

Test Name	Value	Unit	Biological Reference interval
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CLINICAL CHEMISTRY/BIOCHEMISTRY

OSMOLALITY: SERUM

SODIUM: SERUM	132.3 ^L	mmol/L	135.0 - 150.0
GLUCOSE RANDOM (R): PLASMA	89.39	mg/dL	NORMAL: < 140.00 PREDIABETIC: 140.0 - 200.0 DIABETIC: > OR = 200.0
UREA: SERUM	20.37	mg/dL	10.00 - 50.00
BLOOD UREA NITROGEN (BUN): SERUM	9.52	mg/dL	7.0 - 25.0
OSMOLALITY - SERUM <i>by FREEZING POINT DEPRESSION</i>	272.97 ^L	mOSM/kg	275.0 - 300.0

INTERPRETATION:

SERUM OSMOLALITY	URINE OSMOLALITY	CLINICAL SIGNIFICANCE
Normal or Increased	Increased	Fluid Volume Deficit
Decreased	Decreased	Fluid Volume Excess
Normal	Decreased	Increased Fluid intake or diuretics
Increased or Normal	Decreased (with no increase in fluid intake)	Kidneys unable to concentrate urine or lack of ADH (diabetes insipidus)
Decreased	Increased	SIADH

COMMENTS:

- Osmolality refers to the osmotic concentration of a fluid. It depends on the number of active ions or molecules in a solution
- It yields important information about a patient's ability to maintain a normal fluid balance status.
- Increased urine osmolality (hyperosmolality) levels are seen in Addison's disease, Dehydration, Diabetes mellitus/hyperglycemia, hypernatremia, SIADH
- Decreased urine osmolality (hypoosmolality) levels are seen in Sodium loss due to diuretic use and a low salt diet, Diabetes insipidus, Excessive water replacement/overhydration/water intoxication.



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ENDOCRINOLOGY

CORTISOL: MORNING (8 A.M. - 10 A.M.)

CORTISOL MORNING (8 A.M. - 10 A.M.) <i>by CLIA (CHEMILUMINESCENCE IMMUNOASSAY)</i>	7.31	µg/dL	4.26 - 24.85
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INTERPRETATION:

1. A cortisol test is done to measure the level of the hormone cortisol in the blood. The cortisol level may show problems with the adrenal glands or pituitary gland. Cortisol is made by the adrenal glands.
2. Cortisol levels go up when the pituitary gland releases another hormone called adrenocorticotropic hormone (ACTH).
3. Most cortisol in the blood is bound to a protein; only a small percentage is "free" and biologically active. Blood cortisol testing evaluates both protein-bound and free cortisol while urine and saliva testing evaluate only free cortisol, which should correlate with the levels of free cortisol in the blood. Multiple blood and/or saliva cortisol levels collected at different times, such as at 8 am and 4 pm, can be used to evaluate both cortisol levels and diurnal variation. A 24-hour urine cortisol sample will not show diurnal variation; it will measure the total amount of unbound cortisol excreted in 24 hours.

CORTISOL FUNCTIONS:

1. It helps the body use sugar (glucose) and fat for energy (metabolism), and it helps the body manage stress.
2. Bone growth
3. Blood pressure control
4. Immune system function
5. Metabolism of fats, carbohydrates, and protein
6. Nervous system function
7. Stress response

THINGS TO KNOW ABOUT CORTISOL MEASUREMENT:

1. An increased or normal cortisol level just after waking along with a level that does not drop by bedtime suggests excess cortisol and Cushing syndrome. If this excess cortisol is not suppressed after an overnight dexamethasone suppression test, or if the 24-hour urine cortisol is elevated, or if the late-night salivary cortisol level is elevated, it suggests that the excess cortisol is due to abnormal increased ACTH production by the pituitary or a tumor outside of the pituitary or abnormal production by the adrenal glands. Additional testing will help to determine the exact cause.
2. If insufficient cortisol is present and the person tested responds to an ACTH stimulation test, then the problem is likely due to insufficient ACTH production by the pituitary. If the person does not respond to the ACTH stimulation test, then it is more likely that the problem is based in the adrenal glands. If the adrenal glands are underactive, due to pituitary dysfunction and/or insufficient ACTH production, then the person is said to have secondary adrenal insufficiency. If decreased cortisol production is due to adrenal damage, then the person is said to have primary adrenal insufficiency or Addison disease.
3. Once an abnormality has been identified and associated with the pituitary gland, adrenal glands, or other cause, then the health practitioner may use other testing such as CT (computerized tomography) or MRI (magnetic resonance imaging) scans to locate the source of the excess (such



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as a pituitary, adrenal, or other tumor) and to evaluate the extent of any damage to the glands.

4. Similar to those with adrenal insufficiency, people with a condition called congenital adrenal hyperplasia (CAH) have low cortisol levels and do not respond to ACTH stimulation tests. Cortisol measurement is one of many tests that may be used to help evaluate a person for CAH.
5. Heat, cold, infection, trauma, exercise, obesity, and debilitating disease can influence cortisol concentrations. Pregnancy, physical and emotional stress, and illness can increase cortisol levels. Cortisol levels may also increase as a result of hyperthyroidism or obesity. A number of drugs can also increase levels, particularly oral contraceptives (birth control pills), hydrocortisone (the synthetic form of cortisol), and spironolactone.
6. Adults have slightly higher cortisol levels than children do.
7. Hypothyroidism may decrease cortisol levels. Drugs that may decrease levels include some steroid hormones.
8. Salivary cortisol testing is being used more frequently to help diagnose Cushing syndrome and stress-related disorders but still requires specialized expertise to perform.

NOTE:

1. Normally, cortisol levels rise during the early morning hours and are highest about 7 a.m. They drop very low in the evening and during the early phase of sleep. But if you sleep during the day and are up at night, this pattern may be reversed. If you do not have this daily change (diurnal rhythm) in cortisol levels, you may have overactive adrenal glands. This condition is called Cushing's syndrome.
2. The timing of the cortisol test is very important because of the way cortisol levels vary throughout a day. If your doctor thinks you might make too much cortisol, the test will probably be done late in the day. If your doctor thinks you may not be making enough, a test is usually done in the morning.



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ADRENOCORTICOTROPIC HORMONE (ACTH)

ADRENOCORTICOTROPIC HORMONE (ACTH) <i>by CLIA (CHEMILUMINESCENCE IMMUNOASSAY)</i>	14.4	pg/mL	0.00 - 46.00
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INTERPRETATION:

CONDITION	UNITS	REFERENCE RANGE FOR ACTH
HEALTHY ADULT	pg/mL	10 - 46
CORD BLOOD SERUM	pg/mL	50 - 570
NEW BORN	pg/mL	10 - 185

Adrenocorticotrophic hormone (ACTH), the primary stimulator of adrenal cortisol production, is synthesized by the pituitary in response to corticotropin-releasing hormone (CRH), which is released by the hypothalamus.

Plasma ACTH and cortisol levels are both pulsatile and circadian exhibit peaks (6-8 a.m.) and nadirs (11 p.m.).

Cortisol, the main glucocorticoid, plays a central role in glucose metabolism and in the body's response to stress.

In a patient with hypocortisolism, an elevated adrenocorticotrophic hormone (ACTH) indicates primary adrenal insufficiency, whereas a value that is not elevated is consistent with secondary adrenal insufficiency from a pituitary or hypothalamic cause

In a patient with hypercortisolism (Cushing syndrome), a suppressed value is consistent with a cortisol-producing adrenal adenoma or carcinoma, primary adrenal micronodular hyperplasia, or exogenous corticosteroid use.

Normal or elevated ACTH in a patient with Cushing syndrome puts the patient in the ACTH-dependent Cushing syndrome category. This is due to either an ACTH-producing pituitary adenoma or ectopic production of ACTH (bronchial carcinoid, small cell lung cancer, others). Further diagnostic studies such as dexamethasone suppression testing, corticotropin-releasing hormone stimulation testing, petrosal sinus sampling, and imaging studies are usually necessary to define the ACTH source.

CLINICAL USE

1. Diagnose disorders of the hypothalamic pituitary system
2. Differentiate Cushing's syndrome from normal patients when ACTH levels are low

INCREASED LEVELS

1. Stress
2. Addison's disease
3. Pituitary Cushing's disease



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4. ACTH secreting tumor

DECREASED LEVELS

1. Adrenal adenoma
2. Adrenal carcinoma

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CLINICAL PATHOLOGY

OSMOLALITY - RANDOM URINE

SODIUM: RANDOM URINE	129.4	mmol/L	18.0 - 214.00
POTASSIUM: RANDOM URINE	16.49^L	mmol/L	17.00 - 99.00
UREA: RANDOM URINE	350.33		
BLOOD UREA NITROGEN (BUN): RANDOM URINE	163.71		
GLUCOSE RANDOM (R): URINE	2.15		
OSMOLALITY: RANDOM URINE <i>by FREEZING POINT DEPRESSION</i>	333.88	mOSM/kg	300 - 900

INTERPRETATION:

SERUM OSMOLALITY	URINE OSMOLALITY	CLINICAL SIGNIFICANCE
Normal or Increased	Increased	Fluid Volume Deficit
Decreased	Decreased	Fluid Volume Excess
Normal	Decreased	Increased Fluid intake or diuretics
Increased or Normal	Decreased (with no increase in fluid intake)	Kidneys unable to concentrate urine or lack of ADH (diabetes insipidus)
Decreased	Increased	SIADH

COMMENTS:

- Osmolality refers to the osmotic concentration of a fluid. It depends on the number of active ions or molecules in a solution
- It yields important information about a patient's ability to maintain a normal fluid balance status.
- A urine osmolality test may be done on an early morning urine sample as water depletion during the night should concentrate the urine. The test may also be done using multiple timed samples or on a cumulative sample collected over a 24 hour period
- Urine osmolality is a more accurate measurement of urine concentration than specific gravity, and urine osmolality can be compared with the serum osmolality to obtain an accurate picture of a patient's fluid balance.
- With restricted fluid intake, urine osmolality should be greater than 800 mOsm/Kg. A 24 hour urine osmolality should average between 500 and 800 mOsm/Kg. A random urine osmolality should average 300 and 900 mOsm/Kg
- Increased urine osmolality (hyperosmolality) levels are seen in Addison's disease, Dehydration, Diabetes mellitus/hyperglycemia, hypernatremia, SIADH
- Decreased urine osmolality (hypoosmolality) levels are seen in Sodium loss due to diuretic use and a low salt diet, Diabetes insipidus, Excessive water replacement/overhydration/water intoxication.

*** End Of Report ***



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