LABORATORY REPORT

Redcliffe labs

Patient Name	: **Ms Lubna Tanweer**		
DOB/Age/Gender	: 28 Y/Female	Bill Date	: Oct 29, 2023, 12:16 AM
Patient ID / UHID	: 6015971/RCL4548372	Sample Collected	: Oct 29, 2023, 09:17 AM
Referred By	: Dr.	Sample Received	: Oct 29, 2023, 12:00 PM
Sample Type	: Whole blood EDTA	Report Date	: Oct 29, 2023, 12:53 PM
Barcode No	: HX484902	Report Status	: Final Report

NABL M(EL)T LABS
NABL-M(EL)T-00633

Test Description	Value(s)	Unit(s)	Reference Range
HEMATOLOGY REPORT			
Polycystic Ovary Syndrome (PCOS) Panel- Comprehensive			
Complete Blood Count (CBC)			
RBC PARAMETERS			
Hemoglobin Method : colorimetric	12.5	g/dL	12.0 - 15.0
RBC Count Method : Electrical impedance	4.7	10^6/µl	3.8 - 4.8
PCV Method : Calculated	39.3	%	36 - 46
MCV Method : Calculated	84	fl	83 - 101
MCH Method : Calculated	**26.7**	pg	27 - 32
MCHC Method : Calculated	31.8	g/dL	31.5 - 34.5
RDW (CV) * Method : Calculated	**14.2**	%	11.6 - 14.0
RDW-SD * Method : Calculated	42.4	fl	35.1 - 43.9
WBC PARAMETERS			
TLC Method : Electrical impedance and microscopy	8.2	10^3/µl	4 - 10
DIFFERENTIAL LEUCOCYTE COUNT			
Neutrophils	53	%	40-80
Lymphocytes	37	%	20-40
Monocytes	6	%	2-10
Eosinophils	4	%	1-6
Basophils	0	%	<2
Absolute leukocyte counts			
Neutrophils.	4.35	10^3/µl	2 - 7
Lymphocytes.	**3.03**	10^3/µl	1 - 3
Monocytes.	0.49	10^3/µl	0.2 - 1.0
Eosinophils.	0.33	10^3/µl	0.02 - 0.5
Basophils.	**0**	10^3/µl	0.02 - 0.5
PLATELET PARAMETERS			
Platelet Count Method : Electrical impedance and microscopy	311	10^3/µl	150 - 410
Mean Platelet Volume (MPV) *	11.7	fL	9.3 - 12.1

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Consultant Pathologist

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Test Description	Value(s)	Unit(s)	Reference Range
Method : Calculated			
PCT *	**0.4**	%	0.17 - 0.32
Method : Calculated			
PDW *	13.6	fL	8.3 - 25.0
Method : Calculated			
P-LCR *	38	%	18 - 50
Method : Calculated			
P-LCC *	118	%	44 - 140
Method : Calculated			
Mentzer Index *	17.87		

Interpretation:
CBC provides information about red cells, white cells and platelets. Results are useful in the diagnosis of anemia, infections, leukemias, clotting disorders and many other medical conditions.

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Test Description	Value(s)	Unit(s)	Reference Range

HEMATOLOGY REPORT

Polycystic Ovary Syndrome (PCOS) Panel- Comprehensive

Erythrocyte Sedimentation Rate (ESR)

ESR - Erythrocyte Sedimentation Rate	**25**	mm/hr	0 - 12

Method : MODIFIED WESTERGREN

Interpretation:

ESR is also known as Erythrocyte Sedimentation Rate. An ESR test is used to assess inflammation in the body. Many conditions can cause an abnormal ESR, so an ESR test is typically used with other tests to diagnose and monitor different diseases. An elevated ESR may occur in inflammatory conditions including infection, rheumatoid arthritis ,systemic vasculitis, anemia, multiple myeloma , etc. Low levels are typically seen in congestive heart failure, polycythemia ,sickle cell anemia, hypo fibrinogenemia , etc.

AGE	MALE	FEMALE
1 DAY	0-12	0-12
2 - 7 DAYS	0-4	0-4
8 - 14 DAYS	0-17	0-17
15 DAYS - 17 YEARS	0-20	0-20
18 - 50 YEARS	0-10	0-12
51- 60 YEARS	0-12	0-19
61 - 70 YEARS	0-14	0-20
71 - 100 YEARS	0-30	0-35

Reference- Dacie and lewis practical hematology

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Sample Type	: Whole blood EDTA	Report Date	: Oct 29, 2023, 02:23 PM
Barcode No	: HX484902	Report Status	: Final Report

NABL M(EL)T LABS
NABL-M(EL)T-00633

Test Description	Value(s)	Unit(s)	Reference Range

HEMATOLOGY REPORT

Polycystic Ovary Syndrome (PCOS) Panel- Comprehensive

HbA1C (Glycosylated Haemoglobin)

GLYCOSYLATED HEMOGLOBIN (HbA1c) Method : Immunoturbidimetric	5.1	%	< 5.7
ESTIMATED AVERAGE GLUCOSE *	99.67	mg/dL	Refer Table Below

Interpretation:

Interpretation For HbA1c% As per American Diabetes Association (ADA)

Reference Group	HbA1c in %
Non diabetic adults >=18 years	<5.7
At risk (Prediabetes)	5.7 - 6.4
Diagnosing Diabetes	>= 6.5
Therapeutic goals for glycemic control	Age > 19 years Goal of therapy: < 7.0 Age < 19 years Goal of therapy: <7.5

Note:

1. Since HbA1c reflects long term fluctuations in the blood glucose concentration, a diabetic patient who is recently under good control may still have a high concentration of HbA1c. Converse is true for a diabetic previously under good control but now poorly controlled.
2. Target goals of < 7.0 % may be beneficial in patients with short duration of diabetes, long life expectancy and no significant cardiovascular disease. In patients with significant complications of diabetes, limited life expectancy or extensive co-morbid conditions, targeting a goal of < 7.0 % may not be appropriate.

Comments :

HbA1c provides an index of average blood glucose levels over the past 8 - 12 weeks and is a much better indicator of long term glycemic control as compared to blood and urinary glucose determinations ADA criteria for correlation between HbA1c & Mean plasma glucose levels.

HbA1c(%)	Mean Plasma Glucose (mg/dL)	HbA1c(%)	Mean Plasma Glucose (mg/dL)
6	126	12	298
8	183	14	355
10	240	16	413

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Sample Type	: Serum	Report Date	: Oct 29, 2023, 05:53 PM
Barcode No	: ZA217874	Report Status	: Final Report

NABL M(EL)T LABS
NABL-M(EL)T-00633

Test Description	Value(s)	Unit(s)	Reference Range
BIOCHEMISTRY REPORT			
Polycystic Ovary Syndrome (PCOS) Panel- Comprehensive			
Kidney Function Test (KFT)			
BLOOD UREA Method : Urease	22.8	mg/dL	19 - 44.1
CREATININE Method : Photometric	**0.5**	mg/dL	0.57 - 1.11
BUN * Method : Urease	10.65	mg/dL	7.0 - 18.7
BUN/CREATININE RATIO *	21.3		
UREA / CREATININE RATIO *	45.6		
URIC ACID Method : Uricase	**7.2**	mg/dL	2.6 - 6.0
CALCIUM Serum Method : Arsenazo III	9.6	mg/dL	8.4 - 10.2
PHOSPHORUS Method : Photometric	**5.4**	mg/dL	2.3 - 4.7
SODIUM Method : Potentiometric	**135**	mmol/L	136 - 145
POTASSIUM Method : Potentiometric	4	mmol/L	3.5 - 5.1
CHLORIDE Method : Potentiometric	101.7	mmol/L	98 - 107

Interpretation:

Kidney function tests is a collective term for a variety of individual tests and proceduresthat can be done toevaluate how well the kidneys are functioning. Many conditions can affect the ability of the kidneys to carryout their vital functions. Somelead to a rapid (acute) decline in kidney functionothers lead to a gradual (chronic) declineinfunction. Both result in a buildup of toxic waste subst done on urine samples, as well as on blood samples. A number of symptoms may indicate a problem with your kidneys. These include : high blood pressure,blood in urine frequent urges to urinate,difficulty beginning urination,painful urination,swelling in the hands and feet due to a buildup of fluids in the body. A single symptom may not mean something serious. However, when occurring simultaneously, these symptoms suggest that your kidneys are not working properly. Kidney function tests can help determine the reason. Electrolytes (sodium,potassium,and chloride) are present in the human body and the balancing act of the electrolytes in our bodies is essential for normal function of our cells and organs. There has to be a balance.Ionized calcium this test if you have signs of kidney or parathyroid disease. The test may also be done to monitor progress and treatment of these diseases.

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Test Description	Value(s)	Unit(s)	Reference Range

BIOCHEMISTRY REPORT

Polycystic Ovary Syndrome (PCOS) Panel- Comprehensive

Lipid Profile

TOTAL CHOLESTEROL Method : Enzymatic - Cholesterol Oxidase	148	mg/dL	Desirable : <200 Borderline : 200-239 High : >240
TRIGLYCERIDES Method : Colorimetric - Lip/Glycerol Kinase	74.3	mg/dL	Normal : <150 Borderline : 150-199 High : 200-499 Very high : >500
HDL CHOLESTEROL Method : Accelerator Selective Detergent	35.1	mg/dL	>40
NON HDL CHOLESTEROL * Method : Calculated	112.9	mg/dL	<130
LDL CHOLESTEROL * Method : Calculated	98.04	mg/dL	Optimal <100 Near optimal/above optimal 100-129 Borderline high 130-159 High 160-189 Very high >190
V.L.D.L CHOLESTEROL * Method : Calculated	14.86	mg/dL	< 30
CHOL/HDL Ratio * Method : Calculated	4.22	-	3.5 - 5.0
HDL/ LDL RATIO * Method : Calculated	0.36	-	Desirable : 0.5 - 3.0 Borderline : 3.1 - 6.0 High : > 6.0
LDL/HDL Ratio * Method : Calculated	2.79	-	

Interpretation:

Lipid level assessments must be made following 9 to 12 hours of fasting, otherwise assay results might lead to erroneous interpretation. NCEP recommends of 3 different samples to be drawn at intervals of 1 week for harmonizing biological variables that might be encountered in single assays.

National Lipid Association Recommendations (NLA-2014)	Total Cholesterol (mg/dL)	Triglyceride (mg/dL)	LDL Cholesterol (mg/dL)	Non HDL Cholesterol (mg/dL)
Optimal	<200	<150	<100	<130
Above Optimal			100-129	130 - 159
Borderline High	200-239	150-199	130-159	160 - 189
High	>=240	200-499	160-189	190 - 219
Very High	-	>=500	>=190	>=220

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NABL M(EL)T LABS NABL-M(EL)T-00633

Test Description	Value(s)	Unit(s)	Reference Range

Risk Stratification for ASCVD (Atherosclerotic Cardiovascular Disease) by Lipid Association of India.

Risk Category	A. CAD with > 1 feature of high risk group
Extreme risk group	B. CAD with >1 feature of very high risk group of recurrent ACS (within 1 year) despite LDL-C <or = 50 mg/dl or poly vascular disease
Very High Risk	1.Established ASCVD 2.Diabetes with 2 major risk factors of evidence of end organ damage 3. Familial Homozygous Hypercholesterolemia
High Risk	1. Three major ASCVD risk factors 2. Diabetes with 1 major risk factor or no evidence of end organ damage 3. CHD stage 3B or 4. 4 LDL >190 mg/dl 5. Extreme of a single risk factor 6. Coronary Artery Calcium - CAC > 300 AU 7. Lipoprotein a >/= 50 mg/dl 8. Non stenotic carotid plaque
Moderate Risk	2 major ASCVD risk factors
Low Risk	0-1 major ASCVD risk factors
Major ASCVD (Atherosclerotic cardiovascular disease) Risk Factors	
1. Age >/=45 years in Males & >/= 55 years in Females	3. Current Cigarette smoking or tobacco use
2. Family history of premature ASCVD	4. High blood pressure
5. Low HDL	

Newer treatment goals and statin initiation thresholds based on the risk categories proposed by Lipid Association of India in 2020.

Risk Group	**Treatment Goals**		**Consider Drug Therapy**	
	LDL-C (mg/dl)	**Non-HDL (mg/dl)**	**LDL-C (mg/dl)**	**Non-HDL (mg/dl)**
Extreme Risk Group Category A	<50 (Optional goal <OR = 30)	<80 (Optional goal <OR = 60)	>OR = 50	>OR = 80
Extreme Risk Group Category B	>OR = 30	>OR = 60	> 30	> 60
Very High Risk	<50	<80	>OR = 50	>OR = 80
High Risk	<70	<100	>OR = 70	>OR = 100
Moderate Risk	<100	<130	>OR = 100	>OR = 130
Low Risk	<100	<130	>OR = 130*	>OR = 160

*** After an adequate non-pharmacological intervention for at least 3 months.**

References : Management of Dyslipidaemia for the Prevention of Stroke : Clinical practice Recommendations from the Lipid Association of India. Current Vascular Pharmacology,2022,20,134-155.

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Referred By	: Dr.	Sample Received	: Oct 29, 2023, 02:21 PM
Sample Type	: INSULIN F	Report Date	: Oct 29, 2023, 03:27 PM
Barcode No	: ZA217873	Report Status	: Final Report

Test Description	Value(s)	Unit(s)	Reference Range

BIOCHEMISTRY REPORT

Insulin Fasting

Insulin (Fasting) Method : CMIA	14.7	µU/mL	<25.0

Interpretation:

Note

1. A single random blood sample for insulin may provide insufficient information due to wide variation in the time responses of insulin levels and blood glucose.
2. Stimulation of insulin secretion may be caused by many factors like hyperglycemia, glucagon, amino acids, growth hormone and catecholamines.
3. Interference in insulin assay is seen due to insulin antibodies which develop in patients treated with bovine or porcine insulin.

Clinical Utility

· Evaluation of fasting hypoglycemia
· Evaluation of Polycystic Ovary syndrome
· Classification of Diabetes mellitus
· Predict Diabetes mellitus
· Assessment of Beta cell activity
· Select optimal therapy for Diabetes
· Investigation of insulin resistance
· Predict the development of Coronary Artery Disease

Increased levels - Insulinoma, Some Type II diabetic patients, Infantile hypoglycemia, Hyperinsulinism, Obesity, Cushing's syndrome, Oral contraceptives, Acromegaly, Hyperthyroidism

Decreased levels - Untreated Type I Diabetes mellitus

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Sample Type	: Serum	Report Date	: Oct 29, 2023, 04:48 PM
Barcode No	: ZA217874	Report Status	: Final Report

Test Description	Value(s)	Unit(s)	Reference Range

BIOCHEMISTRY REPORT

Anti Thyroid Peroxidase Antibodies (TPO)

ANTI THYROID PEROXIDASE ANTIBODY;(ANTI TPO), SERUM Method : CMIA	**515.9**	IU/mL	< 5.61

Note:-Please correlate clinically.

Interpretation:
Note:
Thyroid Peroxidase antibodies may be detected in individuals without clinically significant thyroid disease. They do not define the patient's thyroid functional status. Anti TPO is technically superior and a more specific method for measuring thyroid antibodies. It is especially useful in patients presenting with subclinical hypothyroidism where TSH is elevated but free T4 levels are normal.

Clinical Use

1· Confirm presence of Autoimmune thyroid disease

Increased Levels
1 · Hashimoto thyroiditis
2· Graves disease
3· Postpartum thyroiditis
4· Primary hypothyroidism due to Hashimoto thyroiditis

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Sample Type	: Serum	Report Date	: Oct 29, 2023, 03:28 PM
Barcode No	: ZA217874	Report Status	: Final Report

Test Description	Value(s)	Unit(s)	Reference Range

BIOCHEMISTRY REPORT

Polycystic Ovary Syndrome (PCOS) Panel- Comprehensive

Dehydroepiandrosterone Sulfate (DHEAS)

DHEAS (Dehydroepiandrostenedione Sulphate)	257.9	µg/dL	

Method : ECLIA

Interpretation:

Age (Years)	Reference Ranges (µg/dL)	
Male	18-21	24-537
	21-30	85-690
	31-40	106-464
	41-50	70-495
	51-60	38-313
	61-70	24-244
	≥ 71	5-253
Females	18-21	51-321
	21-30	18-391
	31-40	23-266
	41-50	19-231
	51-60	8-188
	61-70	12-133
	≥ 71	7-177

Clinical Use

* Marker for Adrenal cortical function and disease
* Differential diagnosis of virilized patient. In patients with virilizing tumors, DHEAS levels usually exceed 7000 µg/dL.

Increased levels

* Congenital Adrenal Hyperplasia
* Adrenal carcinoma
* Virilizing tumors of the Adrenal gland
* Cushing's disease, pituitary dependent

Decreased Levels

* Addison's disease
* Adrenal hypoplasia

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Test Description	Value(s)	Unit(s)	Reference Range

BIOCHEMISTRY REPORT

17-HYDROXYPROGESTERONE (17-OHP), SERUM

17-HYDROXYPROGESTERONE (17-OHP), SERUM 1.22 ng/mL

Method : CLIA

Interpretation:

PHASES OF MENSTRUATION	REFERENCE RANGE IN ng/ml
Follicular phase	0.1 - 0.8
Luteal phase	0.6 - 2.3
Ovulatory phase	0.3 - 1.4
Post ACTH	<3.2
Late pregnancy	2.0 - 12.0
Menopause	0.13 - 0.51
New Born Girls	
1 Month	2.4 - 16.8
2 Month	1.6 - 9.7
3 Month	0.1 - 3.1
New Born Boys	
1 Month	0.0 - 8.0
2 Month	3.6 - 13.7
3 Month	1.7 - 4.0
Children 3 to 14 Years old	0.1 - 1.7
Normal Males	0.5 - 2.1

Comment

17-Hydroxyprogesterone (17-OHP) is produced by both the adrenal cortex and gonads. It is of intense clinical interest because it is the immediate precursor to 11-desoxycortisol which is produced by 21-hydroxylation of 17-OHP. In congenital 21-hydroxylase deficiency, the most common variety of Congenital Adrenal Hyperplasia (CAH), 17-OHP is secreted in excess quantity. It is moderately elevated in the 11-β-hydroxylase deficiency as well. Measurement of 17-OHP is therefore valuable in the initial diagnosis of CAH. The concentration of 17-OHP in newborn varies with age, weight, prematurity and twinning. Premature,sick or stressed infants have higher 17-OHP values leading to false positive screen results. Antenatal corticosteroid treatment may reduce 17-OHP levels resulting in false negative screen

Usage

Marker for Adrenal 21-Hydroxylase enzyme deficiency in

· Infants with features of Adrenal insufficiency like hypotension, vomiting, fever, hypoglycemia and hyperkalemia

· Infants with ambiguous genitalia

· Women with clinical evidence of possible androgen excess, most prevalent in Ashkenazi Jews who have a high prevalence of non-classical 21-hydroxylase deficiency

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Test Description	Value(s)	Unit(s)	Reference Range

17 OHP LEVELS IN ng/mL	REMARKS
<2.0	Diagnosis of CAH unlikely provided sample given in the morning (8-10AM) during follicular phase in menstruating women
2 - 10	Indeterminate, ACTH Stimulation test recommended to differentiate between PCOS and Non classical CAH
>10	Highly suggestive of CAH

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Sample Type	: Serum	Report Date	: Oct 29, 2023, 06:01 PM
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Test Description	Value(s)	Unit(s)	Reference Range
BIOCHEMISTRY REPORT			
Polycystic Ovary Syndrome (PCOS) Panel- Comprehensive			
HOMA-IR.			
GLUCOSE FASTING Method : Plasma, Hexokinase	75.6	mg/dL	70 - 100
Insulin (Fasting) Method : ECLIA	14.7	µU/mL	<25
Beta Cell Function (%B)	208.4		
Insulin Sensitivity (%S)	55.7		
HOMA IR Index Method : Calculated	1.80		<2.5

Interpretation:

1. The HOMA model is used to yield an estimate of insulin sensitivity and beta cell function from fasting plasma insulin and glucose concentrations.
2. Insulin resistance is a state in which normal concentrations of insulin produce a subnormal biologic response.
3. Levels of Insulin are increased in insulinomas, factitious hypoglycemia, insulin autoimmmune syndrome, acromegaly (after ingestion of glucose), Cushings syndrome, corticosteroid administration and levodopa usage.
4. Levels of Insulin are depressed to absent in diabetes mellitus, pituitary tumors and chronic pancreatic diseases i.e. cystic fibrosis. 5. Insulin/ C-peptide ratio is used for differentiating between factitious hypoglycemia and insulinomas where a ratio< 1.0 indicates insulinoma; but results may vary in renal failure.
6. Antibodies to insulin form in longstanding diabetes mellitus treated with insulin hence in these patients monitoring insulin levels gives better prognosis.

Uses of HOMA Values:

1. To assess the risk of development of diabetes. It allows assessment of inherent beta cell function and insulin sensitivity and characterizes the pathophysiology in those with abnormal glucose tolerance.
2. It can be used to assess response to diet or oral drug therapy.

Remarks:

1. Insulin glucose HOMA model cannot be used in those taking exogenous insulin. Under such circumstances, the C peptide HOMA model which uses C peptide to reflect endogenous insulin secretions could be used.
2. ## The software does not accept Plasma Glucose values less than 54.1 mg/dL and more than 450.5 mg/dL, and Serum Insulin values less than 2.9 µU/mL and more than 57.6 µU/mL, for calculation of HOMA IR. Therefore,for values outside the above mentioned ranges, HOMA IR Index ,Beta Cell Function (%B) and Insulin Sensitivity (%S) cannot be reported.

(*) Parameter(s) are outside the scope of tests recognized under the NABL M(EL)T Scheme.

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