PRAJAKTA G KALE	**Reference:Dr.RATHI JAYPRAKASH MD(ME**	**SID: 121058977**
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Age:59.20 Years Sex:FEMALE		05-05-2021 08:46 PM

REPORT

Complete Blood Count	**Result**	**Biological Reference Interval**
(EDTA Whole Blood)		
Hemoglobin (Hb), EDTA whole blood	**13.60**	12.3 - 15.3 g/dL
Method: Photometry		
Total Leucocytes (WBC) count	**8,800**	4000-10000/µL
Method : Coulter Principle / Microscopy		
Platelet count	**393,000**	150000 - 450000 /µL
Method : Coulter Principle / Microscopy		
Red blood cell (RBC) count	**5.07**	4.10 - 5.10 x 10^6 /µL
Method: Coulter Principle		
PCV (Packed Cell Volume)	**41.90**	35.9 - 44.6 %
Method: Calculated		
MCV (Mean Corpuscular Volume)	**82.70**	80.0 - 96.0 fL
Method: Derived from RBC histogram		
MCH (Mean Corpuscular Hb)	**26.70**	27.5 - 33.2 pgms
Method: Calculated		
MCHC (Mean Corpuscular Hb Conc.)	**32.30**	33.4 - 35.5 g/dL
Method: Calculated		
RDW (RBC distribution width)	**14.00**	11.6 - 14.6 %
Method: Derived from RBC Histogram		
WBC Differential Count		
Method: VCSn / Microscopy / Calculated		
Neutrophils	**63**	40 - 80 %
Absolute Neutrophils	**5,544**	2000 - 7000 /µL
Eosinophils	**2**	1 - 6 %
Absolute Eosinophils	**176**	20 - 500 /µL
Basophils	**0**	0 - 2 %
Absolute Basophils	**0**	0 - 100 /µL
Lymphocytes	**30**	20 - 40 %
Absolute Lymphocytes	**2,640**	1000 - 3000 /µL
Monocytes	**5**	2 - 10 %
Absolute Monocytes	**440**	200 - 1000 /µL
-	**+#**	

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Complete Blood Count Findings

R.B.C. : **Normocytic, Normochromic**

W.B.C. : **No abnormality detected**

Platelets : **Adequate**

Remark : ON FOLLOW UP

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Test Description	Observed Value	Biological Reference Interval
Ferritin, serum by CMIA	**42.71**	Female : 4.63- 204 ng/mL

Ferritin is the major iron storage protein for the body. Ferritin is found chiefly in the cytoplasm of cells of the reticuloendothelial system and is a constituent of normal human serum. Generally the concentration of ferritin is directly proportional to the total iron stores in the body. There is a significant positive correlation between age and serum ferritin concentrations in females, but not in males. Patients with iron deficiency anemia have serum ferritin concentration approximately one-tenth of normal while patients with iron overload (hemochromatosis, hemosiderosis) have serum ferritin concentrations much higher than normal. Ferritin is a positive acute phase reactant in both adults and children, whereby chronic inflammation results in a disproportionate increase in ferritin in relation to iron reserves. Elevated ferritin is also observed in acute and chronic liver disease, chronic renal failure, and in some types of neoplastic disease.

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Test Description	Observed Value	Biological Reference Interval
Lipid Profile Mini :		
Cholesterol (Total), serum by Enzymatic method	**178**	Desirable : < 200 mg/dL Borderline high : 200 - 239 mg/dL High : >/= 240 mg/dL
Triglycerides, serum by Enzymatic method	**73**	Normal : < 150 mg/dL Borderline high : 150-199 mg/dL High : 200-499 mg/dL Very high : >/= 500 mg/dL
HDL Cholesterol, serum by Enzymatic method	**51**	Men : > 40 mg/dL Women : > 50 mg/dL
VLDL Cholestrol, serum by calculation	**15**	< 30 mg/dL
LDL Cholesterol, serum by calculation	**112**	Optimal : <100 mg/dL Near optimal/above optimal : 100-129 mg/dL Borderline high : 130-159 mg/dL High : 160-189 mg/dL Very high : >/= 190 mg/dL
Cholesterol(Total)/HDL Cholesterol Ratio	**3.49**	Males : Acceptable ratio </= 5.00 Females : Acceptable ratio </= 4.50
LDL Cholesterol/HDL Cholesterol Ratio	**2.20**	Males : Acceptable ratio </= 3.60 Females : Acceptable ratio </= 3.20

Reference : ATP III, NCEP Guidelines and National Lipid Association (NLA) 2014 Recommendations

As per most international and national guidelines including Lipid Association of India 2016 :

1. Lipoprotein and lipid levels should be considered in conjunction with other atherosclerotic cardiovascular disease (ASCVD) risk determinants to assess treatment goals and strategies.
2. Non-fasting lipid levels can be used in screening and in general risk estimation.

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REPORT

Test Description	Observed Value	Biological Reference Interval
TEST NAME		
Glycated Hemoglobin (HbA1C), by HPLC	**6.00**	4.0 to 5.6 %

Interpretation :
HbA1C level reflects the mean glucose concentration over previous 8-12 weeks and provides better indication of long term glycemic control.

For diagnosis of Diabetes Mellitus (>/= 18 yrs of age) :
5.7 % - 6.4 % : Increased risk for developing diabetes.
>/= 6.5 % : Diabetes

Therapeutic goals for glycemic control :
Adults : < 7%
Toddlers and Preschoolers : < 8.5% (but > 7.5 %)
School age (6-12 yrs) : < 8%
Adolescents and young adults (13 - 19 yrs) : < 7.5 %

Levels of HbA1C may be low as result of shortened RBC life span in case of hemolytic anemia.
Increased HbA1C values may be found in patients with polycythemia or post splenectomy patients.
Patients with Homozygous forms of rare variant Hb(CC,SS,EE,SC) HbA1c can not be quantitated as there is no HbA. In such circumstances glycemic control can be monitored using plasma glucose levels or serum Fructosamine.

The A1c target should be individualized based on numerous factors, such as age, life expectancy, comorbid conditions, duration of diabetes, risk of hypoglycemia or adverse consequences from hypoglycemia, patient motivation and adherence.

Ref : ADA (Standards of Medical Care in Diabetes - 2017)

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REPORT

Test Description	Observed Value	Biological Reference Interval
Enzymes :		
LDH-Lactate Dehydrogenase,serum by UV Kinetic	**186.00**	81 to 234 U/Lt.
Clinical Chemistry		
Uric Acid, serum by Uricase method	**6.30**	Female : 2.60 to 6.00 mg/dL

** Uric acid is useful for 1. Diagnosis and follow up of renal failure. 2. Monitoring patients receiving cytotoxic drugs and a variety of other disorders, including gout, leukemia, psoriasis, starvation and other wasting conditions . * Increased uric acid is seen in following conditions : 1. Increased purine synthesis 2. Inherited metabolic disorders 3. Excess dietary purine intake 4. Increased nucleic acid turnover 5. Malignancy, cytotoxic drugs 6. Decreased urinary excretion (due to CRF) 7. Increased renal reabsorption . * Uric acid is decreased in : 1. Hepatocellular disease with reduced purine synthesis 2. Defective renal reabsorption 3. Overtreatment of uricemia (allopurinol or cancer therpies like 6-mercaptopurine, etc).*

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REPORT

Test Description	Observed Value	Biological Reference Interval
Clinical Chemistry :		
Creatinine, serum by Jaffe w/o deproteinization	**0.74**	0.6 to 1.2 mg/dL
Hormones		
Free T3, serum by CMIA	**2.53**	1.71 to 3.71 pg/mL
Free T4, serum by CMIA	**1.34**	0.71 to 1.85 ng/dL
TSH(Ultrasensitive), serum by CMIA	**1.61**	For non pregnant female : 0.40 - 4.00 µIU/mL For pregnant female : 1st trimester : 0.1 - 2.5 µIU/mL 2nd trimester : 0.2 - 3.0 µIU/mL 3rd trimester : 0.3 - 3.0 µIU/mL Ref : American Thyroid Association guidelines 2017

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REPORT

Test Description	Observed Value	Biological Reference Interval
TEST NAME		
Vitamin B12, serum by CMIA	**432.0**	187 - 883 pg/mL

Interpretation :

1. Vitamin B12 (cobalamin) is necessary for hematopoiesis and normal neuronal function.

2. Vitamin B12 is decreased in

Decreased Serum B12
Pregnancy
Contraceptive hormones
Malabsorption
Ethanol ingestion
Smoking
Strict vegan diet
Pernicious anemia

3. Serum methylmalonic acid and homocysteine levels are also elevated in vitamin B12 deficiency states. Active B12 (Holotranscobalamin) is low in Vitamin B12 deficiency.

4. Please correlate in case of patients taking vitamin B12 supplementation.

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REPORT

Test Description	Observed value	Biological Reference Interval
HOMA Index Insulin Resistance Test		
Plasma glucose fasting, by Hexokinase method	**127**	< 100 mg/dL 100 to 125 mg/dL : Impaired fasting glucose tolerance / Prediabetes >/= 126 mg/dL : Suggestive of diabetes mellitus (On more than one occasion) American Diabetes Association Guidelines 2020
Insulin Fasting, Serum by CMIA	**15.10**	Fasting : 2.5 to 25 µU/mL Peak upto 150 µU/mL
HOMA IR Index	**4.74**	> 2.5 indicates insulin resistance

Interpretation

1. As, the direct measurement of the insulin effect on the blood sugar concentration is not possible other indices are used for determining an insulin resistance.
2. One of the most common indices is the HOMA index (Homeostasis Model Assessment), which is calculated according to the following formula:
   HOMA index = fasting insulin (µU/ml) X fasting blood sugar (mg/dl) /405
3. Indications :
   * Adiposis (BMI > 28 kg/m²)
   * Suspected insulin resistance (metabolic syndrome, diabetes mellitus type 2)
   * Suspected polycystic ovary syndrome (PCO-S)
   * Cycle disturbances (e. g. amenorrhea)
   * Infertility
4. Reference ranges :
   > 2.0 indication for insulin resistance
   > 2.5 insulin resistance probable
   > 5.0 average value in patients with diabetes mellitus type 2

Reference : https://www.bioscientia.de/en/files/2011/10/Marker

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REPORT

Test Description	Observed Value	Biological Reference Interval
TEST NAME		
25 - OH Vitamin D, serum by CMIA	**33.40**	Severe deficiency : < 10 ng/mL Mild to moderate deficiency : 10 to 19 ng/mL Optimum levels : 20 to 50 ng/mL Increased risk of hypercalciuria: 51 to 80 ng/mL Toxicity possible : > 80 ng/mL Ref. : Mayo Medical Laboratories These reference ranges represent clinical decision values, based on the 2011 Institute of Medicine report

Interpretation :

Vitamin D is vital for strong bones. It also has important, emerging roles in immune function and cancer prevention.

Vitamin D compounds in the body are exogenously derived by dietary means; from plants as 25-hydroxyvitamin D2 (ergocalciferol or calciferol) or from animal products as 25-hydroxyvitamin D3 (cholecalciferol or calcidiol).

Vitamin D may also be endogenously derived by conversion of 7-dihydrocholesterol to 25-hydroxyvitamin D3 in the skin upon ultraviolet exposure.

The total 25-hydroxyvitamin D (25-OH-VitD) level (the sum of 25-OH-vitamin D2 and 25-OH-vitamin D3) is the appropriate indicator of vitamin D body stores.

Patients with renal failure can have very high 25-OH-VitD levels without any signs of toxicity, as renal conversion to the active hormone 1,25-OH-VitD is impaired or absent.

Kindly corelate clinically, with supplementation history & repeat with fresh sample if necessary.

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REPORT

Test Description	Observed Value	Biological Reference Interval
CRP(hs) - C- Reactive Protein high sensitivity	**9.02**	See clinical information below . Method : Nephelometry / Immunoturbidimetry

Clinical Information :

1. C-reactive protein (CRP) is a biomarker of inflammation. Plasma CRP concentrations increase rapidly and dramatically (100-fold or more) in response to tissue injury or inflammation.

2. High-sensitivity CRP (hs-CRP) is more precise than standard CRP when measuring baseline (i.e. normal) concentrations and enables a measure of chronic inflammation. It is recommended for cardiovascular risk assessment. Atherosclerosis is an inflammatory disease and hs-CRP has been endorsed by multiple guidelines as a biomarker of atherosclerotic cardiovascular disease risk.

Low cardiovascular risk : < 2.0 mg/L
High cardiovascular risk : >/= 2.0 mg/L
Acute inflammation : > 10.0 mg/L

3. A single test for high-sensitivity CRP (hs-CRP) may not reflect an individual patient's basal hs-CRP level. Repeat measurement may be required to firmly establish an individual's basal hs-CRP concentration. The lowest of the measurements should be used as the predictive value.

Reference : Mayo Medical Laboratories

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REPORT

Test Description	Observed Value	Biological Reference Interval
SARS-CoV-2 IgG Antibodies, Serum by CMIA	**Negative (0.04)**	Negative : < 1.4 Index (S/C) Positive : >/= 1.4 Index (S/C)

Remarks :

* SARS-CoV-2 IgG antibodies usually appear after 2 weeks (14 days) of infection. Presence of IgG antibodies may / may not indicate immunity.

* Detection of SARS-CoV-2 IgG antibodies may be useful for :
  a. Understanding whether an individual is exposed to infection with SARS-CoV-2 including asymptomatic individuals.
  b. Understanding the seroprevalence in communities and especially high risk or vulnerable populations.

* This test may not detect post vaccine immune response to all vaccine types. Anti SARS-CoV-2 spike protein (S1/S2) IgG is recommended in such cases.

** SARS-CoV-2 IgG test is not useful for diagnosis of acute infection.

Reference : ICMR Advisory dated 23/06/2020

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Test Description	Observed Value	Biological Reference Interval
Interleukin 6 (IL-6), serum by ECLIA	**7.41**	Upto 7 pg/mL

Note :

IL-6 assay results may be affected by :

- Sample integrity
- Sample type (serum / plasma)
- Treatment given
- Assay platform used

Kindly interpret the result in view of the above factors and clinical details.

Please repeat on fresh sample if required. (Serum should be separated immediately after clotting).

* Interleukin-6 (IL-6) is produced by different cell types, including macrophages, endothelial cells and T cells, in response to microbial invasion or other cytokines such as tumour necrosis factor (TNF).

* IL-6 induces expression of C-reactive protein (CRP), fibrinogen and serum amyloid A also known as acute phase response.

* Elevated IL-6 seen in :
  - Infections
  - Sepsis, septicimia
  - Rheumatoid arthritis
  - Systemic lupus erythematosus
  - Ankylosing spondylitis
  - Inflammatory Bowel Disease

* IL-6 concentration correlate with severity of sepsis.

End of Report

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