Dr. Gulati Imaging Institute
Diagnosis with Care

J-16, Hauz Khas Enclave, Main Aurobindo Marg, New Delhi - 110016
Phone No. : 011-49515253 - (30 Lines), Email : drgulatiimaging
Website : www.drgulatiimaging.in

Name:	**Mr. RACHIT GUPTA**	Registration No.:	55017
Age/Gender:	36 Y 6 D/Male	Registration Time:	30/Sep/2021 09:47AM
Patient ID:	022109300007	Collection Time:	30/Sep/2021 03:47PM
BacodeNo:	10094194	Reported:	30/Sep/2021 04:13PM
Referred By:	Self	Report Status:	Final

HAEMATOLOGY

Test Name	Result	Unit	Biological Ref.Interval	Method
Hb A1C, GLYCOSYLATED Hb ,EDTA	5.90	%	<5.7	HPLC
MEDIAN AVERAGE GLUCOSE	122.63	mg/dl		Calculated

Interpretation:

As per American Diabeties Association (ADA):

Reference group	HbA1c(%)
Non diabetic adult >=18 Years	< 5.7
At risk (prediabetes)	5.7-6.4
Diagnosing diabetes	>=6.5

Glycemic recommendation for non pregnant adults with diabetes:HbA1C<7.0%

Correlation of HbA1C with Mean Plasma Glucose

HbA1C	Mean plasma glucose (mg/dl)
5.0	97
6.0	126
7.0	154
8.0	183
9.0	212
10.0	240
11.0	269
12.0	298

COMMENTS:

Glycosylated Hb is a normal adult Hb which is covalently bounded to a glucose molecule.Glycosylated Hb concentration is dependent on the average blood glucose concentration and is stable for the life of the RBC (120 days). Glycohaemoglobin serves as suitable marker of metabolic control of diabetics. Its estimation is unaffected by diet, insulin, exercise on day of testing and thus reflects average blood glucose levels over a period of last several weeks /months. There is a 3 - 4 week time before percent Glycohaemoglobin reflects changes in blood glucose levels.It is recommended that the determination of HbA1C should be assessed in conjuction with the patient's medical history,clinical examination and other findings.

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HAEMATOLOGY

Test Name	Result	Unit	Biological Ref.Interval	Method

Limitations:-Abnormal Red cell survival:Samples from patients from haemolytic anaemia will exhibit decreased glycated Hb values due to the shortened half life of the red cells.This effect will depends upon the severity of anaemia.Samples from patients with polycythemia and post- splenectomy may exhibit increased glycated haemoglobin values due to a longer life span of the red cells.Haemoglobin variants: In rare homozygous conditions like in Hb SS or HbCC, There is no Hb A present ;therefore , no HbA1C value can be determined.

Sample type :EDTA(Whole blood)

CBC(WHOLE BLOOD)

HAEMOGLOBIN,EDTA	14.4	g/dl	13.0 - 17.0	SLS-Hemoglobin
TLC(Total Leucocyte Count),EDTA	7800	/cumm	4000-10000	Flow Cytometry
RBC	5.22	million/cumm	4.5-5.5	Electric Impedence
PLATELET COUNT ,EDTA	310	103/cumm	150-450	Electric Impedence
DIFFERENTIAL LEUCOCYTE COUNT*				
NEUTROPHIL& BAND FORMS	45	%	40 - 80	FlowCytometry/ Microscopy
LYMPHOCYTES	**47**	%	20 - 40	FlowCytometry/ Microscopy
EOSINOPHIL	02	%	1 - 6	FlowCytometry/ Microscopy
MONOCYTES	06	%	2 - 10	FlowCytometry/ Microscopy
BASOPHIL	00	%	0 - 2	FlowCytometry/ Microscopy
RBC INDICES				
PCV / HAEMATOCRIT,EDTA	44.0	%	40 - 50	Calculated
MCV,EDTA	**84.3**	fl	87 - 100	pulse height detection
MCH,EDTA	27.6	pg	27 - 32	Calculated
MCHC,EDTA	32.7	%	31.5 - 34.5	Calculated
RDW (cv) ,EDTA	13.1	%	11.6 - 14.0	Calculated

Sample type: Whole blood

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CLINICAL PATHOLOGY

URINE ROUTINE

Test Name	Result	Unit	Biological Ref.Interval	Method
Physical examination				
COLOUR	PALE YELLOW			Visual Observation
VOLUME	30	mL		Visual Observation
APPEARANCE	CLEAR		CLEAR	Visual Observation
CHEMICAL EXAMINATION				
SPECIFIC GRAVITY	1.030		1.000-1.035	Ion exchange
pH	6.00		5.0-7.0	Double Indicator
REDUCING SUGAR	NOT DETECTED		NOT DETECTED	Benedict s reagent
PROTEIN	NEGATIVE		NEGATIVE	protein-error-of-indicators
BLOOD	NIL		Nil	peroxidase activity
KETONES	NEGATIVE		NEGATIVE	Nitroprusside reaction
UROBILINOGEN	NOT INCREASED		NOT INCREASED	Ehrlichs test
BILIRUBIN	NEGATIVE		NEGATIVE	Coupling of bilirubin
LEUKOCYTE ESTERASE	NIL			
NITRITES	ABSENT		ABSENT	Diazonium compound
Microscopic Examination				
PUS CELLS	6-8	/HPF	0-2	Microscopy
EPITHELIAL CELLS	2-3	/HPF	2-3	Microscopy
R.B.C	NIL	/HPF		Microscopy
CASTS	NIL		Nil	Microscopy
BACTERIA	NIL		NIL	Microscopy
CRYSTALS	NIL		Nil	Microscopy
YEAST CELLS	NIL		Nil	Microscopy
MUCUS THREADS	ABSENT		ABSENT	Microscopy
SPERMATOZOA	NIL		NIL	Microscopy
TRICHOMONAS VAGINALIS	NIL		NIL	Microscopy
OTHERS	DEAD SPERMATOZOA PRESENT		Nil	Microscopy

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BIOCHEMISTRY

Test Name	Result	Unit	Biological Ref.Interval	Method
GLUCOSE FASTING (FLUORIDE)				
GLUCOSE FASTING, NaF plasma	96	mg/dL	70-100	GOD-POD

GLUCOSE FASTING(mg/dl):
Cord blood :45-96
Newborn 1 day:40-60
Newborn >1 day:50-80
Child :60-100

Interpretation:
ADA (American Diabetes Association) Criteria-2020

Conditions	Fasting Glucose	2 Hrs (75 gm)Glucose	Random Glucose
Normal	<100 mg/dl	<140 mg/dl	<140 mg/dl
Prediabetes-IGT (Impaired Fasting Glucose)	100-125 mg/dl	- - - -------	--------
Prediabetes (Impaired Glucose tolerance)	----------	140-199 mg/dl or Hb A1c 5.7-6.4 %	----------
Diabetes Mellitus	>126 mg/dl	>200 mg/dl or HbA1c >6.5 %	>200 mg/dl (With symptoms of Hyperglycemia or hyperglycemic Crisis)

Diabetes is a group of disorders associated with insufficient insulin production and/or a resistance to the effects of insulin. People with untreated diabetes are not able to process and use glucose normally. Those who are not able to produce any or enough insulin (and typically have diabetes autoantibodies) are diagnosed as having type 1 diabetes. Those who are resistant to insulin and may or may not be able to produce sufficient quantities of it may have prediabetes or type 2 diabetes.

Factors associated with type 2 diabetes include:

- Obesity
- Lack of exercise
- Family history of diabetes
- Gestational diabetes or having a baby weighing more than 9 pounds
- *Polycystic ovary syndrome (PCOS)*
- High blood pressure
- High triglyceride, high cholesterol Low *HDL cholesterol*
- Having an A1C equal to or above 5.7% or prediabetes identified by previous testing

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BIOCHEMISTRY

- History of cardiovascular disease

Recommended Tests: Glucose Tests(monthly), Insulin, C-Peptide, Urine Microalbumin and Albumin/Creatinine Ratio(annually), HbA1c (3 monthly), Creatinine Clearance, eGFR, Lipid Profile, , urine Ketones, Fructosamine(3 weekly)

Sample Type: NaF Plasma

LIVER FUNCTION TEST. (SERUM)

Test Name	Result	Unit	Biological Ref.Interval	Method
TOTAL BILIRUBIN	0.50	mg/dL	0.2-1.3	Azobilirubin/dyphylline
DIRECT BILIRUBIN (Bc)	0.10	mg/dL	0.0-0.40	Dual wavelength ,reflectance spectrophotometry
INDIRECT BILIRUBIN(Bu)	0.40	mg/dL	0.1-1.0	Dual wavelength ,reflectance spectrophotometry
SGOT (AST)	35.00	IU/L	0.0-40.0	UV With P5P
SGPT (ALT)	49.00	U/L	21-72	Kinetic ,with P-5-P
ALKALINE PHOSPHATASE	**27.0**	U/L	38-126	AMP buffer
GAMMA G.T.	25.00	U/L	15-73	L-γ-glutamyl-p-nitroanilide
TOTAL PROTEIN	7.10	g/dl	6.3-8.2	Biuret
ALBUMIN	4.60	g/dl	3.5-5.2	Bromo-cresol green
GLOBULIN	2.50	gm/dL	2.0-4.0	Calculated
A/G Ratio	1.84		1.0 - 2.1	Calculated

(Expected value of Bilirubin)New born ,premature:

0-1 day :1.0-8.0
1-2 days :6.0-12.0
3-5 days:10.0-14.0

Sample type: Serum

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BIOCHEMISTRY

Test Name	Result	Unit	Biological Ref.Interval	Method
KIDNEY FUNCTION TEST (KFT / RFT) , SERUM				
UREA ,serum	34.00	mg/dL	19-43	UREASE
UREA NITROGEN	15.89	mg/dl	9.0-21.0	Calculated
CREATININE , Serum	1.2	mg/dL	0.66-1.25	Kinetic amidohydrolase
URIC ACID , Serum	4.70	mg/dl	3.5-8.5	Uricase
CALCIUM , Serum	10.00	mg/dl	8.4-10.2	Arsenazo
TOTAL PROTEIN	7.10	g/dl	6.3-8.2	Biuret
ALBUMIN	4.60	g/dl	3.5-5.2	Bromo-cresol green
GLOBULIN	2.50	gm/dL	2.0-4.0	Calculated
Alb/Glo Ratio	1.84		1.0-2.1	Calculated
SODIUM ,Serum	140.0	mmol/L	137-145	ISE direct
POTASSIUM ,Serum	3.90	mmol/L	3.0-5.0	ISE Direct
CHLORIDE ,Serum	102.00	mmol/L	98-107	ISE Direct

Chloride(mmol)/L

Cord blood:96-104
Premature: 95-105

COMMENT:

The kidney plays a vital role in the excretion of waste products and toxins such as urea,creatinine and uric acid ,regulation of extracellular fluid volume ,serum osmolatity and electrolyte concentrations. So the function of kidney can be tested by the above mentioned parameter.
According to national institutes of health the overall prevalence of chronic kidney disease (CKD) is approximately 14%.
Worldwide the most common cause of CKD is hypertension and diabeties.

Sample Type : Serum

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BIOCHEMISTRY

Test Name	Result	Unit	Biological Ref.Interval	Method
LIPID PROFILE (SERUM)				
TOTAL CHOLESTEROL ,Serum	103.00	mg/dL	<200.0	Cholesterol oxidase
TRIGLYCERIDE , Serum	84.00	mg/dL	<150.0	GK/GPO/POD
HDL-CHOLESTEROL , Serum	34.00	mg/dl		Non-HDL precipitation
LDL CHOLESTEROL,Serum	52.20	mg/dl	<100.0	Enzymatic (Two Step CHE/CHO/POD & Catalase)
VLDL ,Serum	16.80			Calculated
TOTAL CHOLESTEROL /HDL RATIO ,Serum	3.03			Calculated
LDL/HDL RATIO	1.54			

Lipid profile is useful for evaluation of cardiovascular risk.

Clinical information :

Cardiovascular disease is one of the leading causes of death in India. Risk factors, including age, smoking status, hypertension, diabetes, cholesterol, and HDL cholesterol, are used by physician to identify individuals likely to have ischemic events.

Reference values :

The National Lipid Association and the National Cholesterol Education Program (NCEP) 2020 have set the guidelines for lipid (Total cholesterol, Triglycerides, HDL Cholesterol, LDL Cholesterol, and non HDL Cholesterol) in children and adults.

	Desirable	Border High	Undesirable
TOTAL CHOLESTROL <20YRS <20 YRS	<200 <170	200-239 170-199	> 240 >200
TRIGLYCERIDES >20 YRS <20YRS	<150 <125	150-199	>=200 >125

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BIOCHEMISTRY

Test Name	Result	Unit	Biological Ref.Interval	Method
LDL >20 YRS <20 YRS	< 130 <110	130-159 110-129	>=160 >=130	
HDL >20 YRS <20 YRS	>=40 >45	35-45	>60	

Sample Type : Serum

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IMMUNOLOGY

Test Name	Result	Unit	Biological Ref.Interval	Method
TSH, Serum	1.40	uIU/mL	0.465-4.68	ECLIA

Comment:

1. TSH levels are subject to circadian variation, reaching peak levels between 2 - 4.a.m.and at a minimum between 6 to 10 p.m. The variation is of the order of 50%; hence time of the day has influence on the measured serum TSH concentrations.
2. Significant numbers of patients particularly those above 55 years of age have a serum TSH level between 4.68 & 10 µIU/ml. This borderline elevation may be due to presence of SUBCLINICAL HYPOTHYOIDISM. Thyroid profile and anti -thyroid (anti TPO & antibodies estimation is suggested in all such cases.
3. Very low serum TSH values are observed in patients who are being treated for hypothyroidism. In such patients Serum Free T4 estimation may also be performed.
4. In pregnancy as per American thyroid association 2018 guidelines, reference range of TSH in µIU/ML.
   - 1 st Trimester 0.02 - 3.78
   - 2 st Trimester 0.47 - 3.89
   - 3 st Trimester 0.55 - 4.91
5. All reports must be interpreted by treating physician only.

A high TSH result may indicate:

- The person tested has an underactive thyroid gland that is not responding adequately to the stimulation of TSH due to some type of acute or chronic thyroid dysfunction; Hashimoto's thyroiditis is the most common cause of hypothyroidism.
- A person with hypothyroidism or who has had their thyroid gland removed is receiving too little thyroid hormone replacement medication and the dose may need to be adjusted
- A person with hyperthyroidism is receiving too much anti-thyroid medication and the dose needs adjusting
- There is a problem with the pituitary gland, such as a tumour producing unregulated levels of TSH
- A rare inherited disorder is present in which the body and/or pituitary do not respond normally to thyroid hormones, resulting in high TSH despite clinically normal thyroid function

A low TSH result may indicate:

- An overactive thyroid gland (hyperthyroidism); Graves disease is the most common cause of hyperthyroidism.
- Excessive amounts of thyroid hormone medication taken by those who are being treated for an underactive (or removed) thyroid gland
- Insufficient anti-thyroid medication in a person being treated for hyperthyroidism; however, it may take a while for TSH production to resume after successful anti-thyroid treatment. This is why the American Thyroid Association recommends monitoring this treatment with tests for

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IMMUNOLOGY

Test Name	Result	Unit	Biological Ref.Interval	Method

thyroid hormones (free T4 and total and free T3) as well as TSH levels.

- Damage to the pituitary gland that prevents it from producing adequate amounts of TSH
- People with thyroid cancer may be treated with medications intended to suppress thyroid hormones, so they may have a low TSH.

Sample Type: Serum

PSA TOTAL ,Serum	0.2	ng/mL	<4.0	ECLIA

COMMENT:

Prostate cancer is the second most common type of cancer found in men, occurring in 50% of those over 70 years of age PSA (Prostate Specific Antigen) is a glycoprotein with a molecular weight of approximately 34 000 Daltons It is found in normal, benign hyper plastic and malignant prostatic tissue as well as in prostatic fluid and seminal plasma. In serum, PSA exists in several different forms. However, only free and alpha-1 chymotrypsin (ACT)-complexed PSA are immunologically active. PSA assay measures total PSA (free and ACT-complexed PSA).

Elevated serum PSA concentrations are found in men with prostate cancer, benign prostatic hypertrophy or inflammatory conditions of other adjacent genitourinary tissues, but not in apparently healthy men or men with cancers other than prostate cancer. Measurement of serum PSA concentrations isnot recommended as a screening procedure for the diagnosis of cancer. However, when combined with other clinical data, the measurement of PSA is useful in the diagnosis of prostate cancer, the early detection of recurrences and the monitoring of therapy.

Test done on Vitros -ECI

Sample type: Serum

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IMMUNOLOGY

Test Name	Result	Unit	Biological Ref.Interval	Method
***VITAMIN B12 ASSAY**				
METHYLCOBALAMINE(VIT B12)	642.00	pg/mL	239-931	ECLIA

COMMENTS :

Vitamin B12 (cobalamin) is an important water-soluble vitamin. In contrast to other water-soluble vitamins it is not excreted quickly in the urine, but rather accumulates and is stored in the liver, kidney and other body tissues. Humans obtain Vitamin

B12 exclusively from animal dietary sources, such as meat, eggs and milk. As a result, a vitamin B12 deficiency may not manifest itself until after 5 or 6 years of a diet supplying inadequate amounts. Vitamin B12 functions as a methyl donor and works with folic acid in the synthesis of DNA and red blood cells and is vitally important in maintaining the health of the insulation sheath (myelin sheath) that surrounds nerve cells.

Preservatives such as fluorides & ascorbic acid interfere with this assay. Excessive exposure of the specimen to specimen to light may alter Vitamin B12 result.

COMMENTS:
Vitamin B12 [Cobalamin] plays a key role in normal functioning of brain and nervous system and for formation of blood.
Deficiency of Vitamin B12 is seen in following conditions:

* Megaloblastic anaemia.
* Peripheral neuropathies.
* Severe psychiatric disorders.

Causes of deficiencies:

* Vegetarians.
* Pernicious anaemia.
* Atrophic gastritis.
* Conditions of small intestine like Celiac disease, bacterial growth, Crohn's disease.
* Excessive alcohol consumption.
* Long term use of acid reducing drugs.
* Babies born to vegetarian mothers may also be deficient.

Toxicity: Being a water soluble Vitamin it is excreted in urine so it does not develop toxicity.

Test done on Vitros -ECI

Sample Type: Serum.

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IMMUNOLOGY

Test Name	Result	Unit	Biological Ref.Interval	Method
***CHOLECALCIFEROL (VITAMIN D), Serum**				
CHOLECALCIFEROL(VIT-D)	36.50	ng/mL	30-100	ECLIA

Interpretation:

VITAMIN D TOTAL RANGE	
STATUS	**25-(OH) VITAMIN D**
Deficient	<20 ng/ml
Insufficient	20-29 ng/ml
Sufficient	30-100 ng/ml
Potential Toxicity	>100 ng/ml

It should be taken into consideration that differences in Vitamin D (25-OH) levels may exist with respect to gender, age, season, geographical latitude and ethnic groups.

Comments:

Vitamin D Total assay is used as an aid in the assesment of Vitamin D sufficiency in adults.

Vitamin D is acquired either by exposure to sunlight or ingestion of food containing vitamin D. It is metabolized to vit D, 25 hydroxy in the liver in the first step by vit D,25-hydroxylase system. A small amount of it further gets metabolized by hydroxylation in kidney to vit D 1,25 dihydroxy. Since vit D, 25 hydroxy is the predominant circulating form of Vit D in normal population, it is considered to be the most reliable index of vit D status.

Vitamin D is essential for bone health. In children, severe deficiency leads to bone-malformation, known as rickets. Milder degrees of insufficiecy are believed to cause reduced efficiency in the utilization of dietary calcium.

The measurement of 25-OH-D is becoming increasingly important in the management of patients with various disorders of calcium metabolism associated with Rickets, neonatal hypocalcemia, pregnancy, nutritional and renal osteodystrophy, hypoparathyroidism, and postmenopausal state.

Increased levels are found in Vit D intoxication.

Decreased levels are detected in Rickets, osteomalacia, secondary hyperparathyroidism, malabsorption of vit D (e.g. liver diseases, cholestasis), and diseases that increase Vit D metabolism (viz. Tuberculosis, sarcoidosis, primary hyperparathyroidism).

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Test done on Vitros -ECI

SAMPLE TYPE: SERUM

*** End Of Report ***

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