BHARAT
PATHOLOGY LABORATORY

Dr. JIGAR R. MEHTA
M.D. Path.
(G-14665)
Consulting Pathologist
ROHIT C. MEHTA
M.Sc. (Micro) MRSH (Lon)

TEST REPORT

Reg. No	: 2105100759	**Reg. Date**	: 17-May-2021
Name	: MR. DHRUVAL CHETAN SHAH	**Collected On**	: 17-May-2021 09:05
Age/Sex	: 25 Years / Male	**Approved On**	: 17-May-2021 13:43
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Parameter	Result	Unit	Reference Interval
COMPLETE BLOOD COUNT			
Hemoglobin (Hb)	13.6	g/dL	13.5 - 18.0
RBC Count	4.88	million/cmm	4.5 - 6.5
WBC COUNT	6190	/cmm	4000 - 10000
Platelets Count	225000	/cmm	150000 - 450000
DIFFERENTIAL WBC COUNT			
Band Cells	00	%	0 - 5
Neutrophils	45	%	40 - 75
Eosinophils	03	%	2 - 6
Lymphocytes	47	%	20 - 50
Monocytes	05	%	2 - 10
RBC MORPHOLOGY			
RBC Morphology	NORMOCHROMIC NOROMOCYTIC		
PERIPHERAL SMEAR EXAMINATION			
Platelets On Smear	ADEQUATE		ADEQUATE
Malarial Parasites	M.P. NOT DETECTED		
ERYTHOCYTE SEDIMENTATION RATE			
ESR, (1 hr), Westergreen	05	mm/hr	0 - 20
RBC INDICES			
Hematrocrit (HCT)	40.3	%	40 - 54
MCV	82.6	fL	80 - 96
MCH	27.8	Pg	27 - 32
MCHC	33.6	g/dL	30 - 36
RDW	12.4	%	11 - 15
MPV	9.5	fL	6.5 - 11.0
PDW	16.1	%	10 - 17.9
PCT	0.210	%	0.100 - 0.500

(On Fully Automated 5 Part Hematology Analyzer H-560, Transasia, Germany)

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URINE ROUTINE EXAMINATION

Parameter	Result	Reference Interval
PHYSICAL EXAMINATION		
Quantity	30 ml	5 - 50
Colour	Pale Yellow	Pale Yellow
Apperance	Clear	Clear
CHEMICAL EXAMINATION		
PH	6.0	5.5 - 8.5
Glucose	Absent	Absent
Protein	Absent	Absent
Ketone Bodies	Absent	Absent
Bile Salts	Absent	Absent
Bile Pigment	Absent	Absent
Urobilinogen	Normal	Normal
Occult Blood	Absent	Absent
MICROSCOPIC EXAMINATION		
Leucocytes (Pus Cells)	0 - 1/hpf	0 - 3
Erythrocytes (Red Cells)	Absent	Absent
Epithelial Cells	1 - 2/hpf	0 - 5
Amorphous Material	Absent	Absent
Casts	Absent	Absent
Crystals	Absent	Absent
Mucus	Absent	Absent
Spermatozoa	Absent	Absent
Bacteria	Absent	Absent

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Parameter	Result	Unit	Reference Interval

BLOOD SUGAR

BLOOD SUGAR

Fasting Blood Sugar (FBS)	84	mg/dL	70 - 110

Method : Hexokinase

Criteria for the diagnosis of diabetes
1. HbA1c >/= 6.5 *
Or
2. Fasting plasma glucose >126 gm/dL. Fasting is defined as no caloric intake at least for 8 hrs.
Or
3. Two hour plasma glucose >/= 200mg/dL during an oral glucose tolerence test by using a glucose load containing equivalent of 75 gm anhydrous glucose dissolved in water.
Or
4. In a patient with classic symptoms of hyperglycemia or hyperglycemic crisis, a random plasma glucose >/= 200 mg/dL.
*In the absence of unequivocal hyperglycemia, criteria 1-3 should be confirmed by repeat testing.
American diabetes association. Standards of medical care in diabetes 2011. Diabetes care 2011;34;S11.

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HEMOGLOBIN A1 C ESTIMATION

Parameter	Result	Unit	Reference Interval
Hb A1C *Method : HPLC*	5.6	% of Total Hb	Below 6.0% - Normal Value 6.0% - 7.0% Good Control 7.0% - 8.0% Fair Control 8.0% - 10.0% Unsatisfactory Control Above 10.0% - Poor Control
Average Blood Glucose (ABG) *Calculated*	114.02	mg/dL	90 - 120 mg/dl : Excellent Control 121 - 150 mg/dl : Good Control 151 - 180 mg/dl : Average Control 181 - 210 mg/dl : Action Suggested More than 210 mg/dl : Panic Value

Degree of Glucose Control Normal Range:
Poor Control >7.0% *
Good Control 6.0 - 7.0 %**Non-diabetic level < 6.0 %
* High risk of developing long term complication such as retinopathy, nephropathy, neuropathy, cardiopathy,etc.
* Some danger of hypoglycemic reaction in Type I diabetics.
* Some glucose intolerant individuals and "subclinical" diabetics may demonstrate HbA1c levels in this area.

EXPLANATION :-
*Total haemoglobin A1 c is continuously symthesised in the red blood cell throught its 120 days life span.The concentration of HBA1c in the cell reflects the average blood glucose concentration it encounters.
*The level of HBA1c increases proportionately in patients with uncontrolled diabetes. It reflects the average blood glucose oncentration over an extended time period and remains unaffected by short-term fluctuations in blood glucose levels.
*The measurement of HbA1c can serve as a convenient test for evaluating the adequacy of diabetic control and in preventing various diabetic complications. Because the average half life of a red blood cell is sixty days,HbA1c has been accepted as a measurnment which eflects the mean daily blood glucose concentration, better than fasting blood glucose determination, and the degree of carbohydrate imbalance over the preceding two months.
*It may also provide a better index of control of the diabetic patient without resorting to glucose loading procedures.

HbA1c assay Interferences:
*Errneous values might be obtained from samples with abnormally elevated quantities of other Haemoglobins as a result of either their simultaneous elution with HbA1c(HbF) or differences in their glycation from that of HbA(HbS)

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LIVER FUNCTION TEST

Parameter	Result	Unit	Reference Interval
SGPT *Method: UV with P5P*	15	U/L	12 - 65
SGOT *Method: UV with P5P*	16	U/L	0 - 37
GGTP *Method : G-glutamyl-carboxy-nitroanilide*	19	U/L	10 - 55
Total Bilirubin *JENDRASSIK & GROF*	0.52	mg/dL	0.2 - 1.0
Direct Bilirubin *Daizotization*	0.10	mg/dL	0.0 - 0.2
Indirect Bilirubin *JENDRASSIK & GROF*	0.42	mg/dL	0.25 - 0.85
Total Protein *BIURET*	6.73	gm/dl	6.4 - 8.3
Albumin *By Bromocresol Green*	4.31	gm/dl	3.5 - 5.2
Globulin *BIURET*	2.42	gm/dl	2.3 - 3.5
A/G Ratio *Calculated*	1.78	gm/dl	1.2 - 2.0
Alakaline Phosphatase *Method: IFCC-PNPP*	92	U/L	53 - 128

(On Fully Automated Biochemistry Analyzer EM-200, Transasia, Germany)

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Parameter	Result	Unit	Reference Interval
KIDNEY FUNCTION TEST			
Creatinine	0.70	mg/dL	0.7 - 1.3
Method : Alkaline picrate			
UREA	19.0	mg/dL	19 - 45
Urease			
BUN	8.9	mg/dL	8.80 - 21.01
Uric Acid	7.1	mg/dL	3.5 - 7.2
Method : Uricase			
CALCIUM	9.3	mg/dL	8.6 - 10.2
Method : O-cresolphthaleincomplexone			
PHOSPHOROUS	4.0	mg/dL	2.5 - 4.9
Method : Phosphomolybdate Reduction			

(On Fully Automated Biochemistry Analyzer EM-200, Transasia, Germany)

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Parameter	Result	Unit	Reference Interval
RHEUMATOID FACTOR (RA)			
RA FACTOR	6.0	IU/mL	0 - 20
Nephelometry			
.			
Comment	R.A. TEST IS NEGATIVE		

Rheumatoid Factor are not exclusively found in rheumatoid arthritis but also in syphilis, systematic lupus erythematosus,hepatitis and hypergammagloubuline.
It is recommended that result of the test should be correlated with clinical finding to arrive at the final diagnosis.

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LIPID PROFILE

Parameter	Result	Unit	Reference Interval
NATURE OF THE SAMPLE	Fasting		
Cholesterol *Cholesterol Oxideesterase; Peroxidase*	**233**	mg/dL	Desirable : < 200.0 Borderline High : 200-239 High : > 240.0
Triglyceride *Enzymatic Endpoint*	**279**	mg/dL	Normal : < 161.0 Borderline : 161-199 High : 200-499 Very High : > 499.0
Value Rechecked			
HDL Cholesterol *Pplyethylene GLycol*	58	mg/dL	Low : < 40 High : > 60
LDL CHOLESTEROL	**148.9**	mg/dL	Optimal : < 100.0 Near / above optimal : 100-129 Borderline High : 130-159 High : 160-189 Very High : >190.0
VLDL *Calculated*	**55.84**	mg/dL	< 40
Cholesterol /HDL Ratio *Calculated*	4.01		0 - 5.0
LDL / HDL RATIO *Calculated*	2.56		0 - 3.5

(**On Fully Automated Biochemistry Analyzer EM-200, Transasia, Germany)**

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THYROID FUNCTION TEST

Parameter	Result	Unit	Biological Reference Interval	Method
T3 (Triiodothyronine)	0.92	ng/mL	0.58 - 1.59	*Method : C.L.I.A.*
T4 (Thyroxine)	8.00	µg/dL	4.87 - 11.72	*Method ; C.L.I.A.*
TSH	0.720	µIU/ml	0.35 - 4.94	*Method : C.L.I.A.*
Comment	SUGGESTING THYRONORMALCY			

TSH	T3/FT3	T4/FT4	Suggested Interpretation for the Thyroid Function Tests Pattern
Within Range	Decreased	Within Range	• Isolated low T3-Often seen in elderly & associated Non-Thyroidal illness. In elderly the drop in T3 level can be up to 25%.
Raised	Within Range	Within Range	• Isolated High TSH especially in the range of 4.7 to 15 mIU/ml is commonly associated with physiological & Biological TSH variability. • Subclinical Autoimmune Hypothyroidism • Intermitted T4 therapy for hypothyroidism. • Recovery phase after Non-Thyroidal illness.
Raised	Decreased	Decreased	• Chronic Autoimmune Thyroiditis • Post thyroidectomy, Post radioiodine • Hypothyroid phase of transient thyroiditis.
Raised or Within Range	Raised	Raised or Within Range	• Interfering antibodies to thyroid hormones(anti-TPO antibodies) • Intermittent T4 therapy or T4 overdose. • Drug interference-Amiodarone, Heparin, Beta blockers, steroids, Anti epileptics.
Decreased	Raised or Within Range	Raised or Within Range	• Isolated low TSH-especially in the range of 0.1 to 0.4 often seen in elderly & associated with Non-Thyroidal illness. • Subclinical Hyperthyroidism • Thyroxin ingestion
Decreased	Decreased	Decreased	• Central Hypothyroidism • Non-Thyroidal illness • Recent treatment for Hyperthyroidism(TSH remains suppressed)
Decreased	Raised	Raised	• Primary Hyperthyroidism(Graves' disease), Multinodular goiter Toxic nodule • Transient thyroiditis; Postpartum, Silent (lymphocytic), post viral (granulomatous, subacute, DeQuevain's) Gestational thyrotoxicosis with hyperemesis gravidarum.
Decreased or Within Range	Raised	Within Range	• T3 toxicosis • Non thyroidal illness

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Parameter	Result	Unit	Reference Interval
VITAMIN B12 TEST			
VITAMIN B12 *Method : C.L.I.A.*	**101**	pg/mL	187 - 833

(Done on fully automated hormone analyzer - ROCHE, E411, JAPAN)

Note : Vitamin B12 or cyanocobalamin,is a complex corrinoid compond found exclusively from animal dietry sources such as meat, eggs and milk. It is critical in normal DNA synthesis which in turn affects erythrocyte maturation and in the formation of myelin sheath-CNS integrity.Vitamin-B12 is used to find out neurological abnormalities & impaired DNA synthesis associated with macrocytic anemias. The evaluation of macrocytic anemia requires measurements of both vitamin B12 and folate levels; ideally they should be measured simultaneously.

Interpretation:
• Decreased In
* Dietary deficiency (e.g. in vegetarians)
* Alchohol consumption
* Abnormalities of cobalamin transport or metabolism
* Bacterial overgrowth
* Crohn disease
* Diphyllobothrium (fish tapeworm) infestation
* Gastric or small intestine surgery
* Hypochlorhydria
* Inflammatory bowel diseas
* Intestinal malabsorption and Intrinsic factor deficiency
* Drugs such as aminosalicylic acid, anticonvulsants, ascorbic acid, cholestyramine, cimetidine, colchicines, metformin, neomycin, oral contraceptives, ranitidine and triamterene
• Increased In
* Post vitamin B12 oral or injectable therapy
* Chronic granulocytic leukemia
* COPD and Chronic renal failure
* Liver cell damage (hepatitis, cirrhosis)
* Polycythemia vera
* Drugs such as chloral hydrate

* Specimen collection soon after blood transfusion can falsely alter vitamin B12 levels.
* Patients taking vitamin B12 supplementation may have misleading results.
* A normal serum concentration of B12 does not rule out tissue deficiency of vitamin B12. The most sensitive test for B12 deficiency at the cellular level is the assay for MMA. If clinical symptoms suggest deficiency, measurement of MMA and homocysteine should be considered, even if serum B12 concentrations are normal.

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Parameter	Result	Unit	Reference Interval
VITAMIN D (25 HYDROXY) TEST			
Vitamin D (25 Hydroxy) *Method : C.L.I.A.*	**13.20**	ng/mL	30.0 - 100.0

(Done on fully automated hormone analyzer - ROCHE, E411, JAPAN)

Interpretation :
Deficiency : Below 10 ng/ml
Insufficiency : 11 to 30 ng/ml
Sufficiency : 31 to 100 ng/ml
Toxicity : Above 100 ng/ml

Note :
Vitamin D is a fat soluble vitamin and exists in two main forms. Cholecalciferol(Vitamin D3) is synthesized in the skin from 7 dehydroxycholestrol in response to sunlight. Ergocalciferol (Vitamin D2) comes essentially from diet (fish, fish oil & fortified food). Both Cholecalciferol and Ergocalciferol converted in the liver to 25 OH Vitamin D. Which is later converted to 1,25 di OH Vitamin D in kidney. 25 OH Vitamin D is considered the best indicator of Vita D because of long half life - 3 wks than other forms.
Increased In
* Vitamin D intoxication-supplement
* Excessive exposure to sunlight
Decreased In
* Inadequate exposure to sunlight
* Malabsorption, Steatorrhea
* Osteoporosis, Osteomalacia, Rickets
* Thyrotoxicosis
* Diseases like Hepatocellular disease, biliary and portal cirrhosis, Nephrotic syndrome, Cancer, Heart diseases, Diabetes, Asthama, Pancreatic insufficiency, Celiac disease, Alzheimer disease
* Infections
* Drugs like anticonvalsant

Limitations:
Levels are affected by skin pigmentation, sunscreen use and seasonal variation - lower in winter.

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