Patient Name : **Mr. Aditya Kumar Singh**
Age / Gender : 35 Y / Male
Referred By : Dr. Gail Chaudhari
SID No. : **40009204**

Reg.Date / Time : 16/02/2022 / 10:38:58
Report Date / Time : 16/02/2022 / 17:32:00
MR No. : **0842276**

Partial Test Report

Specimen	Test Name / Method	Result	Units	Biological Reference Interval
HAEMATOLOGY				
CBC-Haemogram & ESR, blood				
EDTA WHOLE BLOOD				
	HAEMOGLOBIN, RED CELL COUNT & INDICES			
	HAEMOGLOBIN (Spectrophotometry)	15.9	gm%	13 - 18
	PCV (Electrical Impedance)	45.4	%	37 - 47
	MCV (Calculated)	85.1	fL	76 - 96
	MCH (Calculated)	29.8	pg	27 - 32
	MCHC (Calculated)	**35.0**	g/dl	31.5 - 34.5
	RDW-CV (Calculated)	**15**	%	12 - 14
	RDW-SD (Calculated)	36	fL	36 - 46
	TOTAL RBC COUNT (Electrical Impedance)	5.34	Million/cmm	4.7 - 6.1
	TOTAL WBC COUNT (Electrical Impedance)	7050	/cumm	4000 - 11000
	DIFFERENTIAL WBC COUNT			
	NEUTROPHILS (Flow cell)	54.7	%	40-70
	LYMPHOCYTES (Flow cell)	34.6	%	20-40
	EOSINOPHILS (Flow cell)	1.4	%	1-6
	MONOCYTES (Flow cell)	8.9	%	2-10
	BASOPHILS (Flow cell)	0.4	%	0-2
	ABSOLUTE WBC COUNT			
	ABSOLUTE NEUTROPHIL COUNT (Calculated)	3830	/cumm	2000-7000
	ABSOLUTE LYMPHOCYTE COUNT (Calculated)	2430	/cumm	1000-3000

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HAEMATOLOGY				
	ABSOLUTE WBC COUNT			
	ABSOLUTE EOSINOPHIL COUNT (Calculated)	**100**	/cumm	200-500
	ABSOLUTE MONOCYTE COUNT (Calculated)	630	/cumm	200-1000
	ABSOLUTE BASOPHIL COUNT (Calculated)	30	/cumm	0-220
	PLATELET COUNT (Electrical Impedance)	206000	/cumm	150000 - 450000
	MPV (Calculated)	**12.1**	fL	6-11
	PDW (Calculated)	**26.3**	%	11-18
	PCT (Calculated)	0.249	%	0.15-0.50
	PERIPHERAL BLOOD SMEAR			
	COMMENTS (Microscopic)	Normocytic Normochromic RBCs		

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HAEMATOLOGY				
EDTA Blood	**ABO BLOOD GROUP***			
	BLOOD GROUP (Immuno Gel Column)	B		
	Rh TYPE (Immuno Gel Column)	POSITIVE		

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Partial Test Report

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HAEMATOLOGY				
CBC-Haemogram & ESR, blood				
EDTA WHOLE BLOOD				
	ESR(ERYTHROCYTE SEDIMENTATION RATE) (Photometric Capillary)	13	mm / 1 hr	0-15

Notes : The given result is measured at the end of first hour.

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Partial Test Report

Specimen	Test Name / Method	Result	Units	Biological Reference Interval
BIOCHEMISTRY				
BLOOD GLUCOSE (F) + URINE SUGAR				
FLOURIDE PLASMA				
	URINE GLUCOSE FASTING (Urodip)	ABSENT		

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Specimen	Test Name / Method	Result	Units	Biological Reference Interval
BIOCHEMISTRY				
BLOOD GLUCOSE (PP) + URINE SUGAR				
FLOURIDE PLASMA				
	BLOOD GLUCOSE POST PRANDIAL (Hexokinase)	**156**	mg/dl	70 - 140
	URINE GLUCOSE POST PRANDIAL (Urodip)	ABSENT		

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Specimen	Test Name / Method	Result	Units	Biological Reference Interval
BIOCHEMISTRY				
COMPREHENSIVE LIVER PROFILE				
SERUM				
	BILIRUBIN TOTAL (Diazotization)	0.56	mg/dl	0.2 - 1.3
	BILIRUBIN DIRECT (Diazotization)	0.17	mg/dl	0.1-0.4
	BILIRUBIN INDIRECT (Calculation)	0.39	mg/dl	0.2 - 0.7
	ASPARTATE AMINOTRANSFERASE(SGOT) (IFCC)	29	U/L	<40
	ALANINE TRANSAMINASE (SGPT) (IFCC without Peroxidase)	**48**	U/L	<41
	ALKALINE PHOSPHATASE (Colorimetric IFCC)	75	U/L	40-129
	GAMMA GLUTAMYL TRANSFERASE (GGT) (IFCC)	42	U/L	<70
	TOTAL PROTEIN (Colorimetric)	8.30	gm/dl	6.6-8.7
	ALBUMIN (Bromocresol Green)	5.10	gm/dl	3.5 - 5.2
	GLOBULIN (Calculation)	3.20	gm/dl	2.0-3.5
	A/G RATIO (Calculation)	1.6		1-2

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Specimen	Test Name / Method	Result	Units	Biological Reference Interval
BIOCHEMISTRY				
COMPREHENSIVE RENAL PROFILE				
SERUM				
	CREATININE (Jaffe Method)	1.0	mg/dl	0.6 - 1.3
	BLOOD UREA NITROGEN (BUN) (Kinetic with Urease)	7.4	mg/dl	6 - 20
	BUN/CREATININE RATIO (Calculation)	**7.4**		10 - 20
	URIC ACID (Uricase Enzyme)	6.6	mg/dl	3.7 - 7.7
	CALCIUM (Bapta Method)	10.0	mg/dl	8.6-10
	PHOSPHORUS (Phosphomolybdate)	3.0	mg/dl	2.5-4.5

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Partial Test Report

Specimen	Test Name / Method	Result	Units	Biological Reference Interval
BIOCHEMISTRY				
LIPID PROFILE				
SERUM	TOTAL CHOLESTEROL (Enzymatic colorimetric (PHOD))	**237**	mg/dl	Desirable : < 200 Borderline: 200-239 High : > 239
Notes :	Elevated concentrations of free fatty acids and denatured proteins may cause falsely elevated HDL cholesterol results. Abnormal liver function affects lipid metabolism; consequently, HDL and LDL results are of limited diagnostic value. In some patients with abnormal liver function, the HDL cholesterol result may significantly differ from the DCM (designated comparison method) result due to the presence of lipoproteins with abnormal lipid distribution. Reference: Dati F, Metzmann E. Proteins Laboratory Testing and Clinical Use, Verlag: DiaSys; 1. Auflage (September 2005), page 242-243; ISBN-10: 3000171665.			
SERUM	TRIGLYCERIDES (Enzymatic Colorimetric GPO)	**326**	mg/dl	Normal : <150 Borderline : 150-199 High : 200-499 Very High : >499
SERUM	CHOLESTEROL HDL - DIRECT (Homogenize Enzymatic Colorimetry)	41	mg/dl	Low:<40 High:>60
SERUM	LDL CHOLESTEROL (Calculation)	**131**	mg/dl	Optimal : <100 Near Optimal/ Above optimal :100-129 Borderline High: 130-159 High : 160-189 Very High : >= 190
SERUM	VLDL (Calculation)	**65**	mg/dl	15-40
SERUM	CHOL / HDL RATIO	**5.8**		3-5
SERUM	LDL /HDL RATIO (Calculation)	3.0		0 - 3.5

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Specimen	Test Name / Method	Result	Units	Biological Reference Interval
BIOCHEMISTRY				
FLOURIDE PLASMA	BLOOD GLUCOSE FASTING (Hexokinase)	90	mg/dl	70 - 110

Notes : An early-morning increase in blood sugar (glucose) which occurs to some extent in all individuals, more relevant to people with diabetes can be seen (The dawn phenomenon) . Chronic Somogyi rebound is another explanation of phenomena of elevated blood sugars in the morning. Also called the Somogyi effect and posthypoglycemic hyperglycemia, it is a rebounding high blood sugar that is a response to low blood sugar.
References:
http://www.ucdenver.edu/academics/colleges/medicalschool/centers/BarbaraDavis/Documents/book-understandingdiabetes/ud06.pdf, Understanding Diabetes.

EDTA WHOLE BLOOD	**GLYCOSYLATED HAEMOGLOBIN (HbA1C)**			
	HbA1C (High Performance Liquid Chromatography)	**6.4**	%(NGSP)	Non Diabetic Range: <= 5.6 Prediabetes :5.7-6.4 Diabetes: >= 6.5
	ESTIMATED AVERAGE BLOOD GLUCOSE (Calculated)	137	mg/dl	

Notes : HbA1c reflects average plasma glucose over the previous eight to 12 weeks (1). The use of HbA1c can avoid the problem of day-to-day variability of glucose values, and importantly it avoids the need for the person to fast and to have preceding dietary preparations.
HbA1c can be used to diagnose diabetes and that the diagnosis can be made if the HbA1c level is =6.5% (2). Diagnosis should be confirmed with a repeat HbA1c test, unless clinical symptoms and plasma glucose levels >11.1mmol/l (200 mg/dl) are present in which case further testing is not required.
HbA1c may be affected by a variety of genetic, hematologic and illness-related factors (Annex 1, https://www.who.int/diabetes/publications/report-hba1c_2011.pdf) (3). The most common important factors worldwide affecting HbA1c levels are haemoglobinopathies (depending on the assay employed), certain anaemias, and disorders associated with accelerated red cell turnover such as malaria.
References: (1). Nathan DM, Turgeon H, Regan S. Relationship between glycated haemoglobin levels and mean glucose levels over time. Diabetologia, 2007, 50:2239-2244. (2). International Expert Committee report on the role of the A1C assay in the diagnosis of diabetes. Diabetes Care, 2009, 32:1327-1334. (3). Gallagher EJ, Bloomgarden ZT, Le Roith D. Review of hemoglobin A1c in the management of diabetes. Journal of Diabetes, 2009, 1:9-17.

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Specimen	Test Name / Method	Result	Units	Biological Reference Interval
IMMUNOLOGY				
THYROID PROFILE - TOTAL				
SERUM				
	TOTAL TRIIODOTHYRONINE (T3) (ECLIA)	1.40	ng/ml	0.7-2.04
	TOTAL THYROXINE (T4) (ECLIA)	8.87	ug/dl	4.6 - 10.5
	THYROID STIMULATING HORMONE (TSH) (ECLIA)	2.160	uIU/ml	0.27 - 4.20

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IMMUNOLOGY

Notes : TSH is formed in specific cells of the anterior pituitary gland and is subject to a circadian Variation. The Release of TSH is the central regulating mechanism for the biological action of thyroid hormones. TSH has a stimulating action in all stages of thyroid hormone (T3/T4) formation and secretion and it also has a growth effect on Thyroid gland. Even very slight changes in the concentrations of the free thyroid hormones (FT3/FT4) bring about much greater opposite changes in the TSH level.The determination of TSH serves as the initial test in thyroid diagnostics. (1)

Patterns of Thyroid Function Tests (2)
-Low TSH, Low FT4 - Central hypothyroidism.
-Low TSH, Normal FT4, Normal FT3- Subclinical hyperthyroidism.
-Low TSH, High FT4- Hashimoto's thyroiditis, Grave's disease, Molar pregnancy, Choriocarcinoma, Hyperemesis, Thyrotoxicosis, Lithium, Multinodular goiter,Toxic adenoma, Thyroid carcinoma, Iodine ingestion.
-Normal TSH,Low FT4- Hypothyroxinemia, Nonthyroidal illness, Possible secondary hypothyroidism,Medications.
-Normal TSH, High FT4- Euthyroid hyperthyroxinemia, Thyroid hormone resistance, Familial dysalbumineic hyperthyroxinemia, Medications (Amiodarone, beta-blockers, Oral contrast), Hyperemesis, Acute psychiatric illness, Rheumatoid factor.
-High TSH, Low FT4- Primary hypothyroidism.
-High TSH, Normal FT4- Subclinical hypothyroidism, Nonthyroidal illness, Suggestive of follow-up and recheck.
-High TSH, High FT4- TSH mediated hyperthyroidism

Note:
1. Isolated Low TSH -especially in the range of 0.1 to 0.4 often seen in elderly & associated with Non-Thyroidal illness
2. Isolated High TSH especially in the range of 4.7 to 15 uIU/ml is commonly associated with Physiological & Biological TSH Variability.
3. Normal changes in thyroid function tests during pregnancy include a transient suppression of thyroid-stimulating hormone. T4 and total T3 steadily increase during pregnancy to approximately 1.5 times the non-pregnant level. Free T4 and Free T3 gradually decrease during pregnancy

References:
1. Pim-eservices.roche.com. (2018). Customer Self-Service Technical Documentation Portal.
2. "Interpretation of Thyroid Function Tests". 2018. Obfocus.Com.
3. Interpretation of thyroid function tests. Dayan et al. The Lancet, Vol 357, February 24, 2001.
4. Interpretation of thyroid function tests. Supit et al. South Med journal, 2002, 95, 481-485.

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CLINICAL PATHOLOGY				
Urine	**URINE ANALYSIS**			
	PHYSICAL EXAMINATION			
	VOLUME (Volumetric)	30		
	COLOR (Visual Examination)	AMBER		
	APPEARANCE (Visual Examination)	CLEAR		
	CHEMICAL EXAMINATION			
	SP.GRAVITY (Indicator System)	1.020		1.005 - 1.030
	REACTION(pH) (Double indicator)	ACIDIC		
	PROTEIN (Protein-error-of-Indicators)	ABSENT		
	GLUCOSE (GOD-POD)	ABSENT		Absent
	KETONES (Legal's Test)	ABSENT		Absent
	OCCULT BLOOD (Peroxidase activity)	ABSENT		Absent
	BILIRUBIN (Fouchets Test)	ABSENT		Absent
	UROBILINOGEN (Ehrlich Reaction)	NORMAL		
	NITRITE (Griess Test)	ABSENT		
	MICROSCOPIC EXAMINATION			
	ERYTHROCYTES (Microscopy)	ABSENT	/hpf	0-2
	PUS CELLS (Microscopy)	2-3	/hpf	0-5
	EPITHELIAL CELLS (Microscopy)	1-2	/hpf	0-5
	CASTS (Microscopy)	ABSENT		
	CRYSTALS (Microscopy)	ABSENT		
	ANY OTHER FINDINGS	NIL		

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