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RESEARCH ARTICLE

AYURVEDIC MANAGEMENT OF CIRRHOSIS OF LIVER WITH PORTAL HYPERTENSION - A CASE REPORT

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Abstract

Cirrhosis is characterized by severe liver scarring and impaired liver function, typically marks the advanced stage of chronic liver disease. Prolonged exposure to toxins such as alcohol or viral infections primarily causes scarring. Initially, it may progress slowly without noticeable symptoms. However, as liver function deteriorates, serious complications can arise. In classical Ayurvedic texts, it is mentioned as Yakritdalludara.In this case report, a male patient of 40 years of age cameas a diagnosed case of cirrhosis of liver with portal Hypertension with complaints of indigestion, constipation, weakness, nausea and acidity in the OPD of kayachiktsa,drugs such as Kayakalp kwath, Sarvakalp kwath ,Livogrit, Arogyavardhini vati, Livamrit Advance , Punarnavadi mandoor, Haritaki churna , aloe vera juice was given which are effective in pacifying the pitta dosha and purifying the blood and exhibiting immunomodulatory and hepatoprotective action, results into ultimately alleviate underlying symptoms of the patient and liver functioning.

Introduction:-

Cirrhosis is characterized by diffuse hepatic fibrosis and nodule formation . Cirrhosis is the 11th leading cause of death and 15th leading cause of morbidity.[1] The pathologic features consist of the development of fibrosis to the point that there is architectural distortion with the formation of regenerative nodules. This results in a decrease in hepatocellular mass, and thus function, and an alteration of blood flow. The induction of fibrosis occurs with activation of hepatic stellate cells, resulting in the formation of increased amounts of collagen and other components of the extracellular matrix .[2] Alcohol abuse and viral hepatitis (B and C) are the commonest cause of cirrhosis of liver worldwide.Cirrhosis is commonly categorized as compensated or decompensated, depending on whether variceal bleeding, ascites, jaundice, or encephalopathy are absent or present (or have occurred previously). Patients with compensated cirrhosis typically experience longer survival, fewer symptoms, and a better quality of life compared to those with decompensated cirrhosis. This distinction underscores the idea that compensated and

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decompensated cirrhosis represent separate clinical stages of the disease.Portal hypertension is a significant complicating feature of decompensated cirrhosis and is responsible for the development of ascites and bleeding from esophagogastric varices, two complications that signify decompensated cirrhosis.Patients who have developed complications and become decompensated should be considered for liver transplantation.[3]

In Ayurveda, cirrhosis of liver can be correlated to yakritdalludara. It is a condition which primarily affecting the Pitta dosha, which represents the agni and is associated with metabolism, digestion, and transformation within the body. Due to an imbalance in Pitta dosha, leading to the accumulation of toxins (ama) in the liver and disruption of its normal functioning. After describing the Symptomatology of Plihodara it has been mentioned that the causes, symptoms and treatment of Yakratulyodara are same as that of Plihodara. In Sushruta Samhita, we get a specific nomenclature as Yakratulyodara and brief description about the disease.[4]In Bhavaprakasha a special chapter has been dedicated to liver diseases i.e. 33rd chapter- "Plihayakritadhikar" The common Symptoms of Yakratulyodara are Dourbalya, Arochaka, Varcho-mutragraha, Pipasa, Kasa, Shwasa, Mridu Jwara, Anaha, Agnisada etc.[5]The accessibility and affordability of advanced conventional treatment facilities like liver transplantation are very poor especially in developing countries and involves high costs for health care approach ,therefore the need of Ayurveda is high on rise. The implementation of Ayurvedic treatment works like a "magic " in patients with critical condition.

Material and Methods:-

A male patient of 40 years of age hailing from Dehradun approached Kayachikitsa OPD of Patanjali Ayurvedic Hospital, Haridwar in January 2024 as a diagnosed case of cirrhosis of liver with portal Hypertension with complaints of :

S.No	Complaints	Duration
1.	Indigestion	6 months
2.	Vomiting	4 months
3.	Acidity	3 months
4.	Weakness	1 month
5.	Constipation	1 month

As told by the patient ,he had history of alcohol intake from past 20 years.The above mentioned symptoms appeared from last 6 months for which he went to nearby hospital for management but not got significant relief. Now, he approached to our hospital for Ayurvedic management.

Here, we have prescribed oral medications mentioned below for the time period of one month:

Table 1:-

S.no	Drug Prescribed	Dose	Anupana
1.	Kayakalp kwath + Sarvakalp kwath	100 ml X BD	-
2.	Livogrit	2 tab X BD before meal	**Lukewarm water**
3.	Arogyavardhini vati Livamrit Advance Punarnavadi Mandoor	1 tab X TDS after meal	**Lukewarm water**
4.	Haritaki Churna	1 tsf at bed time	**Lukewarm water**
5.	Aloevera juice with fiber	10 ml X BD before meal	-

Kayakalp Kwath:

It contains Chakramarada , Daruhaldi, Karanja, Amla, Giloy, Kutaki, Bakuchi, Baheda, Shwet Chandan, Kali Ziri, KateliChhoti, Haldi, Khair, Neem, Manjishta, Chirayata, Dronapushpi, Harad, Kalijera, Indrayanmool,Devdaru,Ushva which are well known to have hepatoprotective, anti-oxidant, blood detoxification and purgative in action due to their deepaniya, Pittashamaka,yakritutejaka, raktashodhaka and rechaka properties and are useful in yakritvikaras.[6]

Sarvakalp Kwath:

It contains drugs such as Punarnava (Boerhaavia diffusa), Bhumiamla (Phyllanthusniruri), Makoy are best hepatoprotective in nature.Punarnava and bhumiamla exhibit rasayana effect on liver and acts as raktpittaharadravyas.[7]Makoy, helps in protection of liver and also supports liver function , if there is a history of alcohol consumption.

Livogrit:
It is a polyherbal formulation which is prepared by mixing aqueous extracts derived from Punarnava**, Bhumi amla** and Makoy**.**These three herbal constituents in Livogrit possess a range of phytometabolites namely, flavonoids, quercetin, kaempferol, , lignans, tannins and steroidal glycosides etc.that account for the anti-inflammatory, anti-oxidant andhepatoprotective activity.It is known to decrease serum AST and has hepatoprotective effect in cirrhotic patients.[8]

Arogyavardhini vati:
It is an important classical formation which is Sarvarogaprashamani means can alleviate all types of disorders from the body.When there is an imbalance in the Raktavaha Srotas, it can lead to disturbances in the Moolasthana, affecting the entire Srotas. Arogyavardhini enhances Yakrut's functions, possessing qualities of Deepana and Pachana. These properties aid in normalizing Yakrit Srava, promoting digestion and appetite. Arogyavardhini also enhances the liver's detoxification and purification of blood, making it a potent hepatoprotective rasayana drug.[9,10]

Livamrit Advance :
Bhumi amla , Bhringraj (eclipta alba),Kutki (picrorhiza kurroa),Giloy (tinospora cordifolia), Kalmegh (andrographis paniculata), Makoy (solanum nigrum), Punarnava (boerhaavia diffusa), Arjun (terminalia arjuna), Daruhaldi (berberis aristata) are key ingredients which possess antioxidant and hepatoprotective action due to their pittashamaka, raktashodhak and yakritutejaka properties and beneficial in all yakrit vikaras.[11] It works as a rasayana drug on liver.

Punarnavadi Mandoor :
Punarnava, Trivrit ,Shunti ,Pippali ,Maricha ,Vidanga, Danti, Chitraka ,Haritaki ,Bibhitaki , Amalaki, Mandoora Bhasma .These drugs helps to improve the liver functioning which is very useful to remove toxins from the body .

Haritaki churna:
Haritaki possesses both astringent and laxative properties, making it effective in alleviating liver disorders like fatty liver and cirrhosis of liver. Additionally, its anulomana property aids in balancing Apana Vayu, thereby relieving constipation.

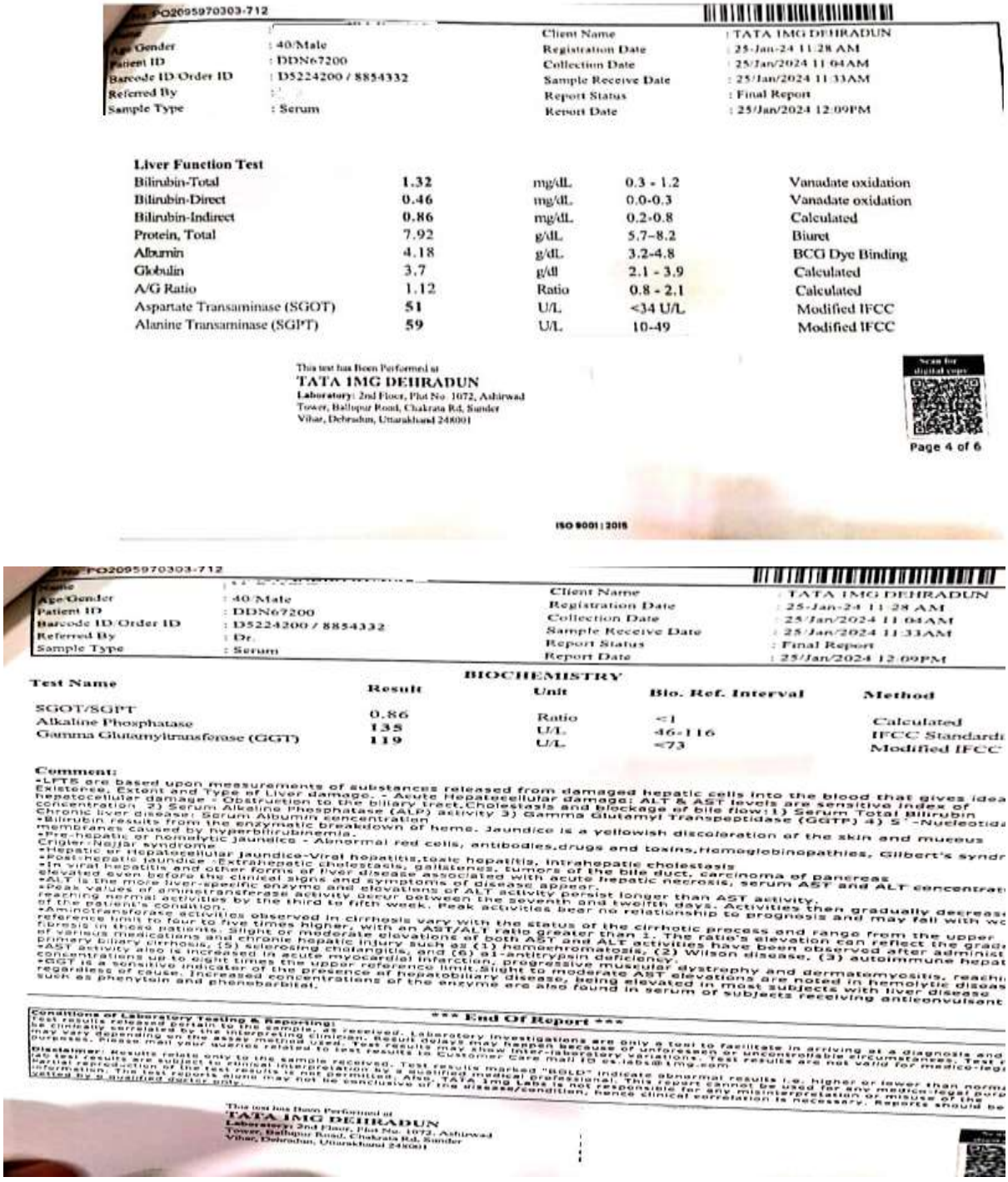
Aloevera juice with fiber:
Aloe vera juice have anti-inflammatory, purgative and antioxidant properties.It helps in relieving constipation due to its purgative property .[12]

Before Treatment-
Table 2:- LFT-

Date	**Total Billirubin**	**Direct Billirubin**	**Indirect Billirubin**	**SGOT**	**SGPT**	**ALP**	**GGT**
25-01-2024	1.32 mg/dl	0.46 mg/dl	0.86 mg/dl	51U/L	59 U/L	135 U/L	119 U/L

USG (22-10-2023)-Appearances are suggestive of hepatic cirrhosis with mild splenomegaly. Liver stiffness test (VTQ ARFI) was performed for the liver, valves ranging from 1.81-2.27 m/sec with overall mean of 1.98 m/sec (11.8 kPa) suggesting increased liver stiffness-cirrhosis F4.

Figure 1:-



PO2095970303-712

Age Gender	: 40/Male	Client Name	: TATA 1MG DEHRADUN
Patient ID	: DDN67200	Registration Date	: 25-Jan-24 11:28 AM
Barcode ID/Order ID	: D5224200 / 8854332	Collection Date	: 25/Jan/2024 11:04AM
Referred By	:	Sample Receive Date	: 25/Jan/2024 11:33AM
Sample Type	: Serum	Report Status	: Final Report
		Report Date	: 25/Jan/2024 12:09PM

Liver Function Test

Bilirubin-Total	1.32	mg/dL	0.3 - 1.2	Vanadate oxidation
Bilirubin-Direct	0.46	mg/dL	0.0-0.3	Vanadate oxidation
Bilirubin-Indirect	0.86	mg/dL	0.2-0.8	Calculated
Protein, Total	7.92	g/dL	5.7-8.2	Biuret
Albumin	4.18	g/dL	3.2-4.8	BCG Dye Binding
Globulin	3.7	g/dl	2.1 - 3.9	Calculated
A/G Ratio	1.12	Ratio	0.8 - 2.1	Calculated
Aspartate Transaminase (SGOT)	51	U/L	<34 U/L	Modified IFCC
Alanine Transaminase (SGPT)	59	U/L	10-49	Modified IFCC

This test has Been Performed at
TATA 1MG DEHRADUN
Laboratory: 2nd Floor, Plot No- 1072, Ashirwad Tower, Ballupur Road, Chakrata Rd, Surinder Vihar, Dehradun, Uttarakhand 248001

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PO2095970303-712

Age Gender	: 40/Male	Client Name	: TATA 1MG DEHRADUN
Patient ID	: DDN67200	Registration Date	: 25-Jan-24 11:28 AM
Barcode ID/Order ID	: D5224200 / 8854332	Collection Date	: 25/Jan/2024 11:04AM
Referred By	: Dr.	Sample Receive Date	: 25/Jan/2024 11:33AM
Sample Type	: Serum	Report Status	: Final Report
		Report Date	: 25/Jan/2024 12:09PM

BIOCHEMISTRY

Test Name	Result	Unit	Bio. Ref. Interval	Method
SGOT/SGPT	0.86	Ratio	<1	Calculated
Alkaline Phosphatase	135	U/L	46-116	IFCC Standardi
Gamma Glutamyltransferase (GGT)	119	U/L	<73	Modified IFCC

Comment:

•LFTS are based upon measurements of substances released from damaged hepatic cells into the blood that gives idea Existence, Extent and Type of Liver damage. - Acute Hepatocellular damage: ALT & AST levels are sensitive indexe of hepatocellular damage - Obstruction to the biliary tract,Cholestasis and blockage of bile flow:1) Serum Total Bilirubin concentration. 2) Serum Alkaline Phosphatase (ALP) activity 3) Gamma Glutamyl Transpeptidase (GGTP) 4) 5'-Nucleotid Chronic liver disease: Serum Albumin concentration

•Bilirubin results from the enzymatic breakdown of heme. Jaundice is a yellowish discoloration of the skin and mucous membranes caused by hyperbilirubinemia.

•Pre-hepatic or hemolytic jaundice - Abnormal red cells, antibodies,drugs and toxins,Hemoglobinopathies, Gilbert's syndr Crigler-Najjar syndrome

•Hepatic or Hepatocellular Jaundice-Viral hepatitis,toxic hepatitis, Intrahepatic cholestasis

•Post-hepatic Jaundice -Extrahepatic cholestasis, gallstones, tumors of the bile duct, carcinoma of pancreas

•In viral hepatitis and other forms of liver disease associated with acute hepatic necrosis, serum AST and ALT concentrat elevated even before the clinical signs and symptoms of disease appear.

•ALT is the more liver-specific enzyme and elevations of ALT activity persist longer than AST activity.

•Peak values of aminstransferase activity occur between the seventh and twelfth days. Activities then gradually decreas reaching normal activities by the third to fifth week. Peak activities bear no relationship to prognosis and may fall with wo of the patient's condition.

•Aminotransferase activities observed in cirrhosis vary with the status of the cirrhotic process and range from the upper reference limit to four to five times higher, with an AST/ALT ratio greater than 1. The ratio's elevation can reflect the gradu fibrosis in these patients. Slight or moderate elevations of both AST and ALT activities have been observed after administ of various medications and chronic hepatic injury such as (1) hemochromatosis, (2) Wilson disease, (3) autoimmune hepat primary biliary cirrhosis, (5) sclerosing cholangitis, and (6) α1-antitrypsin deficiency.

•AST activity also is increased in acute myocardial infarction, progressive muscular dystrophy and dermatomyositis, reachi concentrations up to eight times the upper reference limit. Slight to moderate AST elevations are noted in hemolytic diseas regardless of cause. Increased concentrations of the enzyme are also found in serum or subjects receiving anticonvulsant such as phenytoin and phenobarbital.

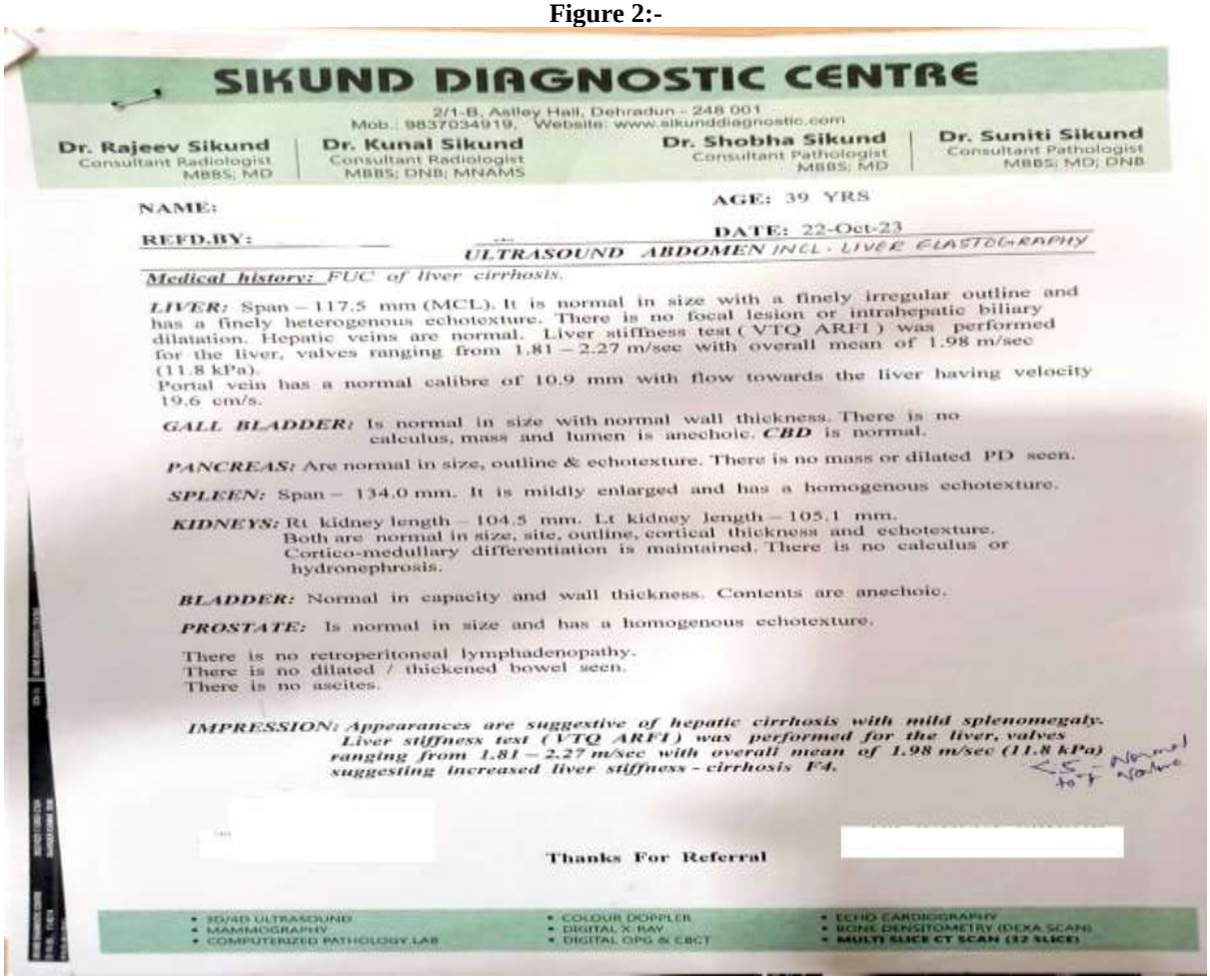
*** End Of Report ***

Conditions of Laboratory Testing & Reporting:
Test results released pertain to the sample, as received. Laboratory investigations are only a tool to facilitate in arriving at a diagnosis and be clinically correlated by the interpreting clinician. Result delays may happen because of unforeseen or uncontrollable circumstances. Test r may vary depending on the assay method used. Test results may also be false because of inter-laboratory variations. Test results are not valid for medico-legal purposes. Please mail your queries related to test results to Customer Care mail ID ex.labs@1mg.com

Disclaimer: Results relate only to the sample received. Test results marked "BOLD" indicate abnormal results i.e. higher or lower than norma (as test results are subject to clinical interpretation by a qualified medical professional. This report cannot be used for any medico-legal purp Partial reproduction of the test results is not permitted. Also, TATA 1mg Labs is not responsible for any misinterpretation or misuse of the information. The test reports alone may not be conclusive of the disease/condition, hence clinical correlation is necessary. Reports should be verified by a qualified doctor only.

This test has Been Performed at
TATA 1MG DEHRADUN
Laboratory: 2nd Floor, Plot No- 1072, Ashirwad Tower, Ballupur Road, Chakrata Rd, Surinder Vihar, Dehradun, Uttarakhand 248001

Figure 2:-



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Dr. Kunal Sikund, Consultant Radiologist, MBBS; DNB; MNAMS
Dr. Shobha Sikund, Consultant Pathologist, MBBS; MD
Dr. Suniti Sikund, Consultant Pathologist, MBBS; MD; DNB

NAME: AGE: 39 YRS

REFD.BY: DATE: 22-Oct-23

ULTRASOUND ABDOMEN INCL. LIVER ELASTOGRAPHY

Medical history: FUC of liver cirrhosis.

LIVER: Span – 117.5 mm (MCL). It is normal in size with a finely irregular outline and has a finely heterogenous echotexture. There is no focal lesion or intrahepatic biliary dilatation. Hepatic veins are normal. Liver stiffness test (VTQ ARFI) was performed for the liver, valves ranging from 1.81 – 2.27 m/sec with overall mean of 1.98 m/sec (11.8 kPa).
Portal vein has a normal calibre of 10.9 mm with flow towards the liver having velocity 19.6 cm/s.

GALL BLADDER: Is normal in size with normal wall thickness. There is no calculus, mass and lumen is anechoic. CBD is normal.

PANCREAS: Are normal in size, outline & echotexture. There is no mass or dilated PD seen.

SPLEEN: Span – 134.0 mm. It is mildly enlarged and has a homogenous echotexture.

KIDNEYS: Rt kidney length – 104.5 mm. Lt kidney length – 105.1 mm.
Both are normal in size, site, outline, cortical thickness and echotexture.
Cortico-medullary differentiation is maintained. There is no calculus or hydronephrosis.

BLADDER: Normal in capacity and wall thickness. Contents are anechoic.

PROSTATE: Is normal in size and has a homogenous echotexture.

There is no retroperitoneal lymphadenopathy.
There is no dilated / thickened bowel seen.
There is no ascites.

IMPRESSION: *Appearances are suggestive of hepatic cirrhosis with mild splenomegaly. Liver stiffness test (VTQ ARFI) was performed for the liver, valves ranging from 1.81 – 2.27 m/sec with overall mean of 1.98 m/sec (11.8 kPa) suggesting increased liver stiffness - cirrhosis F4.*

Thanks For Referral

• 3D/4D ULTRASOUND • COLOUR DOPPLER • ECHO CARDIOGRAPHY
• MAMMOGRAPHY • DIGITAL X-RAY • BONE DENSITOMETRY (DEXA SCAN)
• COMPUTERIZED PATHOLOGY LAB • DIGITAL OPG & CBCT • MULTI SLICE CT SCAN (32 SLICE)

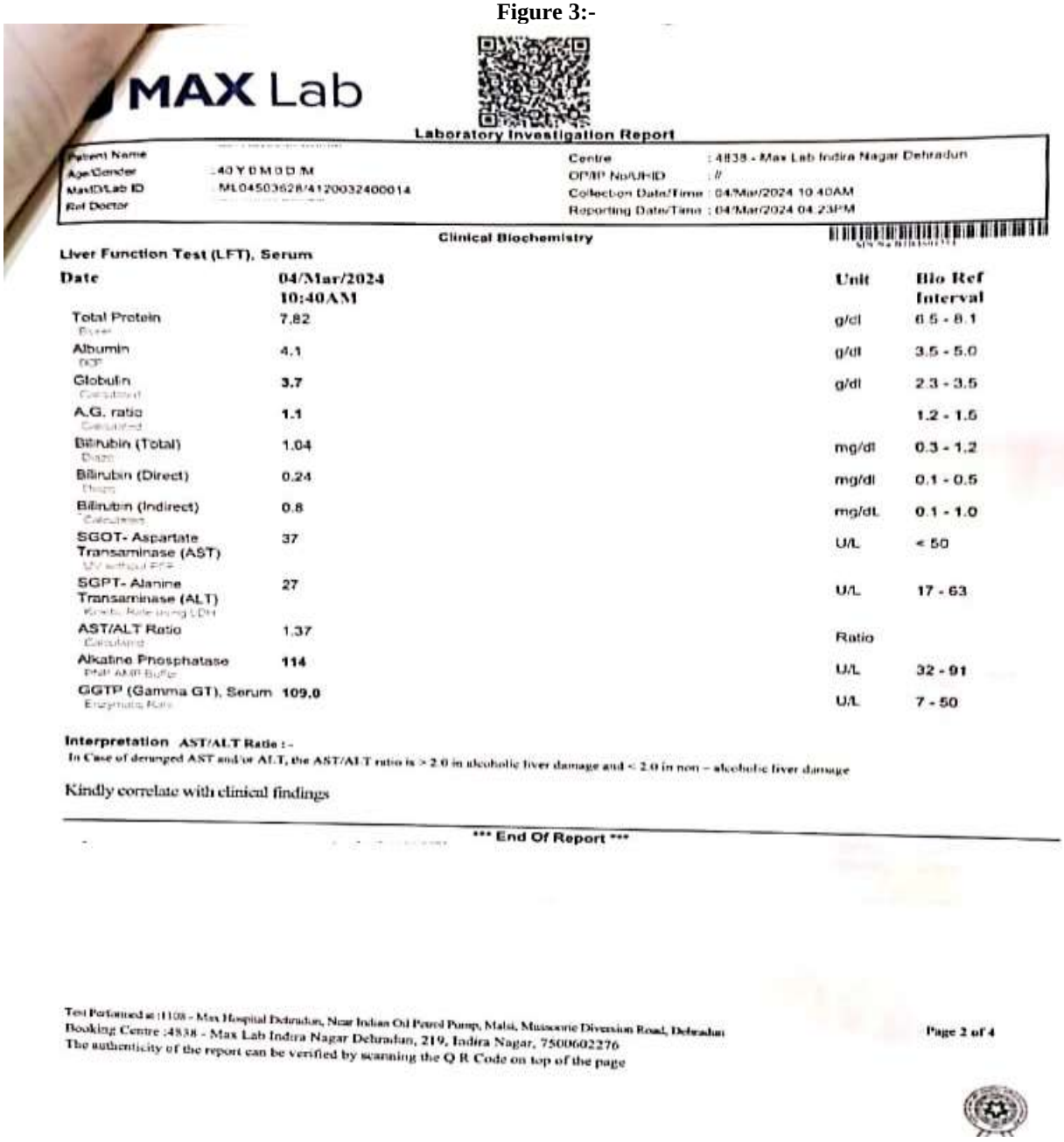
After Treatment:

Table 3:-LFT-

Date	Total Billirubin	Direct Billirubin	Indirect Billirubin	SGOT	SGPT	ALP	GGT
04-03-2024	1.04 mg/dl	0.24 mg/dl	0.8 mg/dl	37 U/L	27 U/L	114 U/L	109 U/L

USG (06-03-2024) - Appearances are suggestive of hepatic cirrhosis with mild splenomegaly.Liver stiffness test (VTQ ARFI) was performed for the liver, valves ranging from 1.82-2.17 m/sec with overall mean of 1.90 m/sec (11.2 kPa) suggesting increased liver stiffness-F2. As compared to previous USG dated 22.10.2023, Findings have slightly improved.

Figure 3:-



MAX Lab

Laboratory Investigation Report

Patient Name		Centre	: 4838 - Max Lab Indira Nagar Dehradun
Age/Gender	:40 Y 0 M 0 D /M	OP/IP No/UHID	: //
MaxID/Lab ID	:ML04503628/4120032400014	Collection Date/Time	: 04/Mar/2024 10:40AM
Ref Doctor		Reporting Date/Time	: 04/Mar/2024 04:23PM

Clinical Biochemistry

Liver Function Test (LFT), Serum

Date	04/Mar/2024 10:40AM	Unit	Bio Ref Interval
Total Protein (Biuret)	7.82	g/dl	6.5 - 8.1
Albumin (BCP)	4.1	g/dl	3.5 - 5.0
Globulin (Calculated)	3.7	g/dl	2.3 - 3.5
A.G. ratio (Calculated)	1.1		1.2 - 1.5
Bilirubin (Total) (Diazo)	1.04	mg/dl	0.3 - 1.2
Bilirubin (Direct) (Diazo)	0.24	mg/dl	0.1 - 0.5
Bilirubin (Indirect) (Calculated)	0.8	mg/dL	0.1 - 1.0
SGOT- Aspartate Transaminase (AST) (IFCC without P5P)	37	U/L	< 50
SGPT- Alanine Transaminase (ALT) (Kinetic Rate using LDH)	27	U/L	17 - 63
AST/ALT Ratio (Calculated)	1.37	Ratio	
Alkaline Phosphatase (PNP AMP Buffer)	114	U/L	32 - 91
GGTP (Gamma GT), Serum (Enzymatic Rate)	109.0	U/L	7 - 50

Interpretation AST/ALT Ratio :-
In Case of deranged AST and/or ALT, the AST/ALT ratio is > 2.0 in alcoholic liver damage and < 2.0 in non – alcoholic liver damage

Kindly correlate with clinical findings

*** End Of Report ***

Test Performed at :1108 - Max Hospital Dehradun, Near Indian Oil Petrol Pump, Malsi, Mussoorie Diversion Road, Dehradun
Booking Centre :4838 - Max Lab Indira Nagar Dehradun, 219, Indira Nagar, 7500602276
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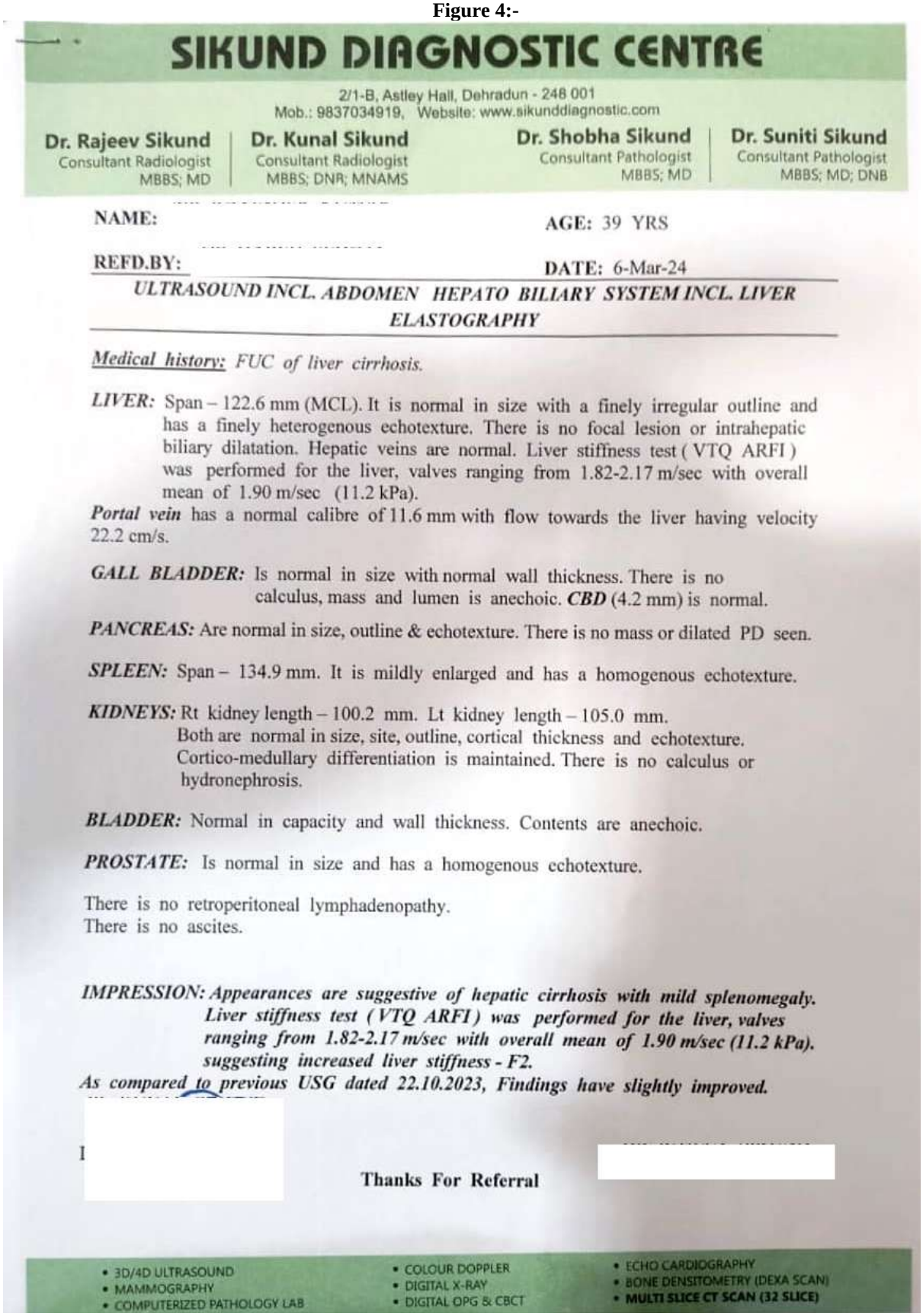
Figure 4:-



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Consultant Radiologist MBBS; MD	Consultant Radiologist MBBS; DNR; MNAMS	Consultant Pathologist MBBS; MD	Consultant Pathologist MBBS; MD; DNB

NAME: **AGE:** 39 YRS

REFD.BY: **DATE:** 6-Mar-24

ULTRASOUND INCL. ABDOMEN HEPATO BILIARY SYSTEM INCL. LIVER ELASTOGRAPHY

Medical history: *FUC of liver cirrhosis.*

LIVER: Span – 122.6 mm (MCL). It is normal in size with a finely irregular outline and has a finely heterogenous echotexture. There is no focal lesion or intrahepatic biliary dilatation. Hepatic veins are normal. Liver stiffness test (VTQ ARFI) was performed for the liver, valves ranging from 1.82-2.17 m/sec with overall mean of 1.90 m/sec (11.2 kPa).

Portal vein has a normal calibre of 11.6 mm with flow towards the liver having velocity 22.2 cm/s.

GALL BLADDER: Is normal in size with normal wall thickness. There is no calculus, mass and lumen is anechoic. ***CBD*** (4.2 mm) is normal.

PANCREAS: Are normal in size, outline & echotexture. There is no mass or dilated PD seen.

SPLEEN: Span – 134.9 mm. It is mildly enlarged and has a homogenous echotexture.

KIDNEYS: Rt kidney length – 100.2 mm. Lt kidney length – 105.0 mm. Both are normal in size, site, outline, cortical thickness and echotexture. Cortico-medullary differentiation is maintained. There is no calculus or hydronephrosis.

BLADDER: Normal in capacity and wall thickness. Contents are anechoic.

PROSTATE: Is normal in size and has a homogenous echotexture.

There is no retroperitoneal lymphadenopathy.
There is no ascites.

IMPRESSION: Appearances are suggestive of hepatic cirrhosis with mild splenomegaly. Liver stiffness test (VTQ ARFI) was performed for the liver, valves ranging from 1.82-2.17 m/sec with overall mean of 1.90 m/sec (11.2 kPa). suggesting increased liver stiffness - F2.

As compared to previous USG dated 22.10.2023, Findings have slightly improved.

Thanks For Referral

- 3D/4D ULTRASOUND
- MAMMOGRAPHY
- COMPUTERIZED PATHOLOGY LAB
- COLOUR DOPPLER
- DIGITAL X-RAY
- DIGITAL OPG & CBCT
- ECHO CARDIOGRAPHY
- BONE DENSITOMETRY (DEXA SCAN)
- MULTI SLICE CT SCAN (32 SLICE)

Discussion:-

Cirrhosis is characterized by increase in fibrous tissue, gradual and extensive liver cell death, and inflammation that disrupts the normal liver structure. This disease progresses slowly, gradually replacing healthy liver tissue with scar tissue, results into impairing of liver function.According to Ayurveda, the liver (Yakrit) is considered the root of the Raktavaha Srotas, and Pitta is believed to be the waste product of Rakta. Therefore, the Ayurvedic management approach for Yakritvikaras focuses on balancing the Pitta Dosha,improving the **Jatharagni** (metabolism) and stimulating the hepatic function. So in this case, we have given drugs which have effect on pacifying the pitta dosha and purifying the blood and exhibiting immunomodulatory and hepatoprotective action.

Result:-

Patient showed positive result in the time period of one month.Vomiting has subsided and better improvement was noted in other symptoms.Good improvement has been noted in the liver function tests as shown in Table 3 (04.03.2024). Slight improvement has been observed in USG as shown in fig 4. There was no adverse drug reaction noted throughout the treatment and the patient was satisfied.

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