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CASE REPORT

Management of the *Koshtha Shakhashrita Kamala*: A Case Report

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ABSTRACT

Jaundice is characterized by yellowing of the skin, sclera, and mucous membranes due to elevated bilirubin levels, often resulting from liver dysfunction. In *Ayurveda*, it is correlated with *Kamala*, a disorder caused by *Pitta Dosha* imbalance affecting the liver and peripheral tissues. This case study explores the potential of *Ayurvedic* approaches, including detoxification, herbo-mineral medicine, and dietary regulations in managing hepatocellular jaundice. A 50-year-old female patient presented with abdominal pain, fatigue, yellowish discoloration of the eyes and skin, and loss of appetite. Laboratory investigations revealed increased bilirubin levels, confirming jaundice. The patient was diagnosed with *Koshta Shakhashrita Kamala* based on clinical symptoms such as yellowish discoloration of the skin and eyes, abdominal pain, yellow stool, weakness, loss of appetite, as mentioned by *Acharya Charak,* and liver function test reports. Elevated bilirubin levels were found (total bilirubin – 4.22 mg/dL, direct – 0.72 mg/dL, indirect – 3.50 mg/dL), indicating liver dysfunction rest all other parameters were normal. The *Ayurvedic* treatment plan included detoxification, herbo-mineral formulations, and lifestyle modifications. *Mridu Virechana* (mild purgative therapy) was administered to eliminate excess *Pitta Dosha* and restore liver function. The patient was prescribed *Arogyavardhini Vati, Sharpunkha Churna, Giloy Churna, Bhumyamalaki Churna, Punarnava Mandoor*, and *Triphala Churna* for their hepatoprotective and detoxifying properties. Dietary modifications and lifestyle adjustments were also recommended. The patient demonstrated marked clinical improvement, with total bilirubin levels decreasing from 4.22 mg/dL to 1.9 mg/dL. Similarly, direct bilirubin levels declined from 0.72 mg/dL to 0.13 mg/dL, and indirect bilirubin levels reduced from 3.50 mg/dL to 0.43 mg/dL. Symptoms, including fatigue and abdominal discomfort, were significantly alleviated, contributing to an improved quality of life. This case highlights the importance of early diagnosis and timely intervention in jaundice management. Integrating *Ayurvedic* detoxification methods, herbo-mineral formulations, and dietary modifications can effectively support liver function and promote recovery. *Ayurveda* offers a promising approach to managing jaundice and improving liver health.

1. INTRODUCTION

Jaundice is a condition characterized by the yellowish discoloration of the sclera, mucous membrane, and skin. Medically, it is known as hyperbilirubinemia, which occurs due to an increased level of bilirubin in the blood. Clinically, jaundice becomes detectable when the plasma bilirubin level exceeds 2.5 mg/dL.[1] Patients suffering from jaundice commonly experience symptoms such as abdominal pain, itching, weight loss, fever with rigor, nausea, loss of appetite, headache, indigestion, dark-colored urine, and generalized weakness. The metabolism of bilirubin occurs in three stages. The first stage, known as the breakdown phase, involves the degradation of hemoglobin in the reticuloendothelial system, leading to the formation of bilirubin, which is transported in the bloodstream while being attached to albumin. The second stage, called the conjugation phase, occurs in the liver, where unconjugated bilirubin is converted into conjugated bilirubin by the enzyme glucuronyl transferase, present in the endoplasmic reticulum of hepatocytes. The third stage, known as the excretion phase, involves the secretion of conjugated bilirubin into the bile canaliculi, from where it reaches the intestines and is converted into stercobilinogen by bacterial action, eventually being expelled through feces.[2]

In *Ayurveda*, jaundice is referred to as *Kamala*, classified as a *Pittaja* and *Raktapradoshaja Vyadhi* (a disorder involving *Pitta*

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Dosha and *Rakta Dhatu*). It primarily affects the liver (~*Yakrit*) due to an aggravated *Pitta Dosha*, which in turn vitiates *Rakta* (~blood tissue) and *Mamsa* (~muscle tissue). *Kamala* is further categorized into three types: *Kosthashrita Kamala* (affecting the gastrointestinal tract), *Shakhashrita Kamala* (affecting peripheral tissues), and *Koshtha Shakhashrita Kamala* (involving both the gastrointestinal tract and peripheral tissues). Overindulgence in foods and activities that aggravate *Pitta Dosha* (*Pittaja Ahara* and *Vihara*) results in its elevation within the body. The aggravated *Pitta Dosha* then vitiates *Rakta* and *Mamsa*, impairing liver function. This results in *Agnimandya* (~digestive impairment), which affects the proper transformation of food (~*Aahar Rasa Dushti*). As a result, *Pitta and Rakta* circulate throughout the body, causing yellow discoloration of the skin, sclera, and nails, along with weakness, indigestion, and fatigue. The disease primarily affects the *Raktavaha, Annavaha*, and *Rasavaha Srotas* (bodily channels), leading to *Srotodushti* (pathological changes in channels) such as *Sanga* (obstruction) and *Vimarga Gaman* (abnormal movement of doshas). Eventually, this condition progresses to *Koshtha Shakhashrita Kamala*, which presents with distinct clinical symptoms. The primary line of treatment includes *Mridu Virechana* (mild purgation) using *Tikta Dravya* (bitter substances).,[3] *Pittahara Chikitsa* (treatment to pacify *Pitta Dosha*.[4]

2. PATIENT INFORMATION

A 50-year-old female patient presented to the Kayachikitsa outpatient department at Ch. Brahm Prakash Ayurved Charak Samsthan New Delhi with complaints of sudden-onset diffuse abdominal pain, predominantly localized to the right hypochondrium, for further evaluation and management. The pain was insidious in onset, gradually progressive, and not associated with any identifiable aggravating or relieving factors. Over the next few days, she developed yellowish discoloration of her eyes and skin, accompanied by generalized weakness and fatigue. No history of fever, nausea, vomiting, or altered bowel habits was found. There was no history of recent travel, alcohol intake, or similar episodes in the past. She also had an investigation with a raised level of serum bilirubin (total) – 4.22 mg/dL, bilirubin (direct) – 0.72 mg/dL, bilirubin (indirect) – 3.50 mg/dL [Table 1].

3. CLINICAL FINDING

General examination of the patient revealed that the patient was moderately built, well nourished (apparently), and afebrile. Pallor and icterus were present. No cyanosis/clubbing/enema/lymphadenopathy was observed. Hair was dry, brittle, and rough. The tongue was moist, and pallor was present on the undersurface of the tongue. The patient came with a liver function test. Elevated levels of serum bilirubin (total) – 4.22 mg/dL, bilirubin (direct) – 0.72 mg/dL, bilirubin (indirect) – 3.50 mg/dL. The patient was thin and fatigued, appearing tired. Blood pressure was 130/80 mmHg, and pulse was 110/min. Her appetite was decreased to one meal/day, along with disturbed bowel movements. Sleep patterns were normal.

During the abdominal examination, the inspection revealed that the umbilicus was inverted and centrally placed, with no visible peristalsis, scars, or discoloration. On palpation, the abdomen was found to be soft, but tenderness was present in all quadrants, with Grade-2 tenderness being more pronounced in the right hypochondrium. No signs of organomegaly were observed. Percussion findings indicated dullness over the right hypochondrium, suggesting possible liver involvement, while tympanic sounds were heard in the remaining quadrants of the abdomen. On auscultation, bowel sounds were audible at a frequency of approximately 16/min. No abnormality was found in the cardiovascular system, respiratory system, central nervous system, or gastrointestinal tract.

The patient was evaluated using the *Dashavidha Pareeksha*, a comprehensive 10-fold examination. Assessment of *Prakriti* (body constitution) indicated a *Vata–Pitta* constitution, with predominance of *Pitta* in a *Tridoshaja* state. The examination also revealed a balanced *Satva* (mental constitution), whereas *Sara Pareeksha* (examination of tissue essence) indicated a moderate level of tissue essence. *Samhana* (~compactness) was also found to be moderate. In terms of *Aahar shakti*, the patient demonstrated decreased intake of food. *Satyma* examination (~compatibility) was moderate, whereas *Pramana (*~measurement of blood organs) showed average results. The patient's *Vyama shakti* (~capacity for exercise) was assessed as decreased, considering their age to be in the middle range. Moving on to the *Asthavidha Pareeksha*, an eight-fold examination, the patient's pulse (*Nadi*) was noted to be *Manda gati* with a rate of 66 beats/min. Bowel movements (*Mala*) were reported as abnormal (*Ama*), and urine (*Mutra*) examination was dark yellow. Speech (*Shabda)* was considered ordinary (*Sadharana*), and the tongue (*Jivha*) appeared coated with a whitish coating discoloration (*Ama*). Body built (*Akriti*) was assessed as moderate, whereas vision (*Drik*) and touch (*Saparsha*) were noted to be within normal ranges.

3.1. Timeline

Time line are mentioned in table 1.

3.2. Diagnostic assessment

Assessment of the disease is done based on improvement in symptoms and characteristics mentioned in the *Ayurvedic* text, which are mentioned in the[5] [Table 2].

3.3. Therapeutic intervention

After completing the assessment of the patient and obtaining their consent, drug intervention was administered [Tables 4 and 5].

3.4. Follow up and outcome

During the treatment period, significant improvements were observed in the levels of bilirubin. In addition, the patient experienced relief from symptoms. Furthermore, her generalized body weakness was reduced during the follow-up session [Figures 1-3].

3.5. Outcome in objective criteria

The changes in liver profile after the treatment depicted as level of Bilirubin Direct changed to 0.72 mg/dl to 0.13mg/dl, bilirubin direct to 3.50mg/dl to 0.43 mg/dl, bilirubin total 4.22 mg/dl to 0.56 mg/dl which described in below table 5:

4. DISCUSSION

This case represents hepatocellular jaundice, characterized by elevated levels of both direct and indirect bilirubin. In *Ayurveda*, this condition is correlated with *Kostha-Shakhashrita Kamala*, as the aggravated *Pitta Dosha* not only accumulates in the *Kostha* (~gastrointestinal tract) but also spreads to the *Shakha* (~peripheral tissues). This occurs due to *Srotorodha* (~blockage of bodily channels) or the accumulation of *Ama* (~toxins) within the microchannels of the *Yakrit* (~liver). In modern

medicine, this condition is referred to as intrahepatic obstruction, where the normal flow of conjugated bilirubin from the liver to the intestines is impaired. To counteract this pathogenesis, *Acharya Charaka* has recommended *Virechana* (~therapeutic purgation) as the primary line of treatment. *Virechana* is highly effective in eliminating vitiated *Pitta Dosha*, thereby restoring normal liver function. In addition, as the *Guda* (~rectum) serves as the nearest route for the elimination of excess *Pitta*, *Virechana* therapy ensures effective detoxification and symptomatic relief in *Kostha-Shakhashrita Kamala*.

4.1. Mode of Action of *Shodhan* (~Purification)

The Ayurvedic formulations used in the management of *Kamala* (~jaundice) work primarily by pacifying *Pitta Dosha*, enhancing liver function, and detoxifying the body. *Kalyanaka Ghrita, Panchagavya Ghrita*, and *Mahatikta Ghrita* are commonly used medicated ghee preparations that help in reducing *Pitta* aggravation, promoting bile secretion, and rejuvenating liver cells.[6] By balancing *Pitta Dosha* and improving *Agni* (digestive fire), *Ayurvedic* management not only alleviates symptoms but also enhances liver function and overall well-being. These formulations exhibit *Deepana* (~digestive stimulant), *Pachana* (~metabolism enhancer), and *Shodhana* (~detoxification) properties, which aid in the proper digestion and elimination of toxins.

Furthermore, *Ayurvedic* interventions include *Mridu Virechana* (~mild purgation therapy), which eliminates accumulated Pitta and restores normal liver function. The combination of herbal formulations, detoxification procedures, and dietary modifications ensures comprehensive management of *Kamala* by addressing both the symptoms and the underlying causes of the condition. This holistic approach not only improves liver function but also strengthens digestion, boosts immunity, and prevents recurrence.

4.2. Mode of Action of *Arogyavardhini Vati*

Arogyavardhini Vati is a traditional Ayurvedic preparation of herbal and mineral origin, predominantly containing *Kutaki (Picrorhiza kurroa).* This herb plays a vital role in stimulating bile secretion and supporting liver detoxification. According to *Ayurveda, Arogyavardhini Vati* helps eliminate *Srotoavrodha* (~blockage in microchannels) and pacifies *Ama* (~toxins), which ultimately enhances gut health. It is traditionally categorized as *Deepani* (~digestive stimulant), *Pachani* (~digestive aid), and *Malshodhakari* (~promoting waste elimination), making it beneficial for various digestive and metabolic disorders.[7]

4.3. Mode of Action of *Bhumyamlaki*

Bhumyamlaki (Phyllanthus niruri) is known for its *Pitta-Kaphahara* (~balancing Pitta and Kapha), *Ruchya* (~appetizer). It possesses *Madhura*, *Tikta*, and *Kashaya Rasa* (sweet, bitter, and astringent tastes), *Madhura Vipaka*, and *Sheeta Virya* (cool potency). Due to its hepatoprotective and antiviral properties, it is widely used in managing *Pittaj and Raktaj Vikar* (Pitta and blood-related disorders), especially in conditions involving liver inflammation.[8]

4.4. Mode of Action of *Guduchi*

Guduchi (Tinospora cordifolia), possessing *Madhura Vipaka, Kashaya-Katu-Tikta Rasa*, and *Agni Deepak* (digestive fire stimulant) properties, is highly recommended *in Kamla Roga* (jaundice) due to its detoxifying and immunomodulatory effects.[9]

4.5. Mode of Action of *Punarnava*

Another vital component, *Punarnava (Boerhavia diffusa*), is renowned for its *hepatoprotective* properties, which aid in liver regeneration and ensure the maintenance of a healthy bile flow. With its *Vata-Kapha Nashak* and *Agni Deepak* properties, it is effective in treating *Udar Roga* (abdominal disorders).[10]

4.6. Mode of Action of *Triphala*

In addition, *Triphala* (a blend of *Amla, Haritaki,* and *Bibhitaki*) enhances digestion and functions as a mild laxative, facilitating the excretion of excess bilirubin. It also demonstrates *Pitta-Kaphahara* properties, aiding in the maintenance of digestive balance and the regulation of metabolism.[11]

4.7. Mode of Action of *Sarphunkha*

Sarphunka (Tephrosia purpurea) is another powerful herb in this formulation, well-known for its hepatoprotective, anti-inflammatory, and diuretic properties. It aids in liver detoxification, promotes bile secretion, and is beneficial in managing hepatic disorders, ascites, and spleen enlargement. Furthermore, its *Pitta-Kapha* balancing qualities help reduce liver inflammation and enhance overall digestive and urinary health.

4.8. Dietary Recommendation (*Pathya-Apthaya*)

Foods that possess *Ruksha* (dry), *Amla* (sour), and *Katu* (pungent) properties are particularly beneficial in balancing aggravated *Pitta* and *Kapha doshas*.[12] Vegetables such as *Patola* (pointed gourd), *Vridha Kushmanda* (ash gourd), and *Taruna Kadaliphal* (banana fruit) aid in detoxification and digestion. In addition, certain herbs and fruits, including *Pakva Aam* (Ripe mango), *Jeevanti* (*Leptadenia reticulata*), *Guduchi* (*Tinospora cordifolia*), *Punarnava* (*Boerhavia diffusa*), *Dronpushpi* (*Leucas cephalotes*), and *Vartaku* (Brinjal), are known for their hepatoprotective and rejuvenating effects.[13] To support digestion and metabolism, *Lasuna* (Garlic) and *Abhaya* (Terminalia chebula – *Haritaki)* are recommended due to their mild digestive stimulant properties. On the other hand, oily, fried, and spicy foods should be strictly avoided as they burden the liver and hinder detoxification. Foods that are heavy to digest, such as dairy, red meat, and excessive carbohydrates, may slow down liver function and should be minimized. Similarly, excessively sour and fermented foods, including pickles, vinegar, and curd, can aggravate *Pitta* and worsen jaundice symptoms. Caffeine, alcohol, and carbonated drinks are also harmful as they stress the liver and interfere with recovery.

5. CONCLUSION

The *Ayurveda* medicaments can be a choice of herbal and natural supplements to manage metabolic disturbances. This case is highlighting the strength of *Ayurveda* medicaments strength in the field of hepatobiliary system imbalance. Based on biochemical parameters and features in the present case of hepatocellular jaundice, the above-mentioned managements were found very effective.

5.1. Patient perspective

The patient had been suffering from jaundice for a few days. After consulting an *Ayurvedic* physician, the patient decided to undergo the treatment protocol as prescribed by the physician. The overall experience was highly positive, with a focus on natural herbs, detoxification, and dietary adjustments.

5.2. Key message and take-away lesson

Holistic approaches play a crucial role in managing hepatic dysfunction, and raising awareness about lifestyle changes and routine medical evaluations can aid in the prevention and better management of jaundice-related complications.

5.3. Consent of patient

The consent of the patient has been taken for publication and procedure without disclosing the identity of the patient.

6. ACKNOWLEDGMENTS

Nil.

7. AUTHOR'S CONTRIBUTION

- J.V: Led the conceptualization and methodology development, ensured validation processes, and supervised the research.
- B.S.S: Contributed to writing and reviewing the manuscript, performed data analysis.
- P.S: Responsible for drafting and editing the original manuscript, conducting data analysis, participating in validation, and managing the overall project.
- A.D: Engaged in reviewing and analyzing data, contributed to validation.
- K.S: Assisted in project management and contributed to formal data analysis.

8. FUNDING

Nil.

9. ETHICAL APPROVALS

This study does not require ethical clearance as it is a case study.

10. CONFLICTS OF INTEREST

Nil.

11. DATA AVAILABILITY STATEMENT

The initial diagnostic reports were provided by the patient, having been conducted at a local laboratory near his residence before presentation. Based on these findings, treatment was initiated. Subsequently, confirmatory investigations were performed at the Rog Nidan Laboratory, Ch. Brahm Prakash Ayurved Charak Samsthan New Delhi Hospital, during treatment. All relevant data generated or analyzed in this case report are included in the article.

12. PUBLISHERS NOTE

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Table 1: Timeline of the events

Duration	Events
October 01, 2024	The patient complained of yellowish discoloration of eyes, urine, and feces for 20 days along with abdominal pain and generalized weakness.
October 05, 2024	After some time, when the patient did not get relief, thorough investigations were conducted, elevated levels of serum bilirubin (total) – 4.22 mg/dL, bilirubin (direct) – 0.72 mg/dL, and bilirubin (indirect) – 3.50 mg/dL. The patient was diagnosed with hepatocellular jaundice, and with these complaints, the patient wants to have *Ayurvedic* management
October 07, 2024	The patient comes to the *Kayachikitsa* OPD at Ch. Brahm Prakash Ayurved Charak Samsthan New Delhi along with all investigations.
	Proper assessment of the patient with personal history was done on the first visit, and the patient was advised to take prescribed medication along with essential lifestyle modifications and dietary regimens. Te patient was advised to take Avipattikar churna 5 g HS with lukewarm water for the first 7 days for the purpose of *Mridu Virechana*. Followed by *Arogyavardhini Vati 2* tablets, each 500 mg twice a day before meals with lukewarm water. *Punarnava mandoor* 2 tablets, each 500 mg, twice a day after a meal. *Triphala churna* 5 g, i.e., 1 tsf with lukewarm water at bedtime, mixture of drugs combined with *Sarphunkha churn* 20 g, *Giloy churna* 10 g, *Bhumyamalaki churna* 10 g – 1 tsf twice a day with water [Table 4]
October 20, 2024	In the second visit, the patient got relief from abdominal pain, along with no icterus present. Generalized weakness persists [Table 3]
November 19, 2024	The patient came with reported levels of bilirubin total – 2.89 mg/dL, bilirubin direct – 0.37 mg/dL [Figures 1 and 2, Table 5]. The patient also got relief from weakness
December 26, 2024	Patient came for a follow-up session with her LFT reports, all values in normal range [Figure 3] Bilirubin (total – 0.56 mg/dL, direct – 0.13 mg/dL, indirect – 0.43 mg/dL)

OPD: Outpatient department, LFT: Liver function test

Table 2: Improvement in symptoms based on *Ayurveda*

Symptoms	Before treatment	After treatment
Haaridra Netraha (Yellowish discoloration of sclera)	++	–
Haaridra Twak (Yellowish Skin)	++	–
Haaridra Nakha (Yellowish Nail)	++	–
Haaridra Aanana (Yellowish Face)	++	–
Rakta Peeta Shakrut (Red or Yellow Color Faces)	+	–
Avipaka (Indigestion)	+	–
Dourbalya (Weakness)	++	–
Sadana (Tiredness and Fatigue)	++	–
Rakta Peeta Mutra (Red or Yellow Color Urine)	++	–
Aruchi (Anorexia)	++	–

Table 3: Improvize of the subjective parameters

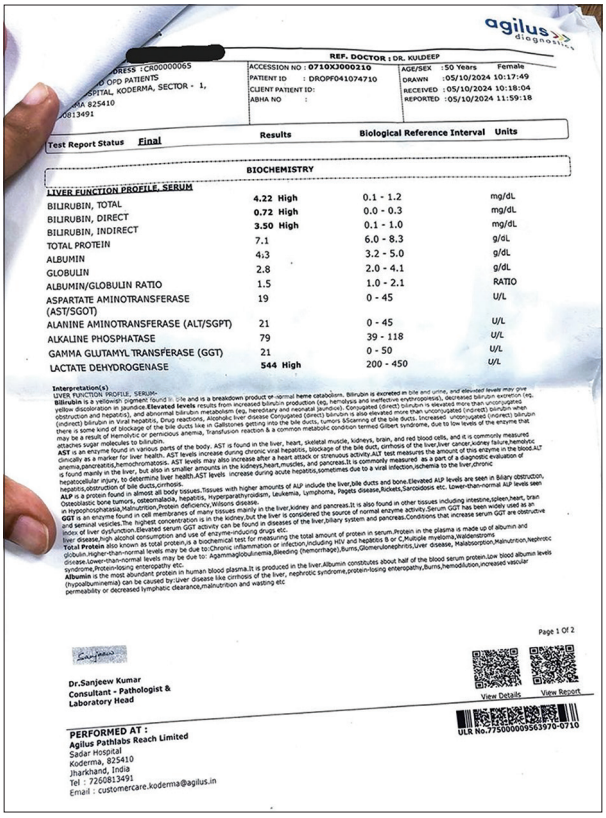
Symptoms	Before treatment	After treatment
Dark-colored urine	++	–
Abdominal pain	+++	–
Itching	–	–
Fever with rigor	–	–
Loss of weight	–	–
Loss of appetite	++	–
Indigestion	+	–
Generalized weakness	++	–

Table 4: Therapeutic intervention for 1 month

Duration	Intervention	Dose	Anupana
October 07, 2024	*1. Arogyavardhini vati* • *Sharpunkha churna 20 g* • *Giloy churna 10 g* • *Bhumyamalaki churna 10 g* *2. Punarnava mandoor* *3. Triphala churna*	1.Tablets each 500 mg twice a day 2. Mix it and take 1 teaspoon twice a day 3. Tablets each 500 mg twice a day 4.5 g at bedtime	1. Lukewarm water 2. Lukewarm water 3. Lukewarm water 4. Lukewarm water
October 20, 2024	Continued same treatment	–	–
November 19, 2024	Continued same treatment		
December 26, 2024	Follow Up		

Table 5: Improvize of the objective parameters

LFT	Before treatment (October 05, 2024)	After treatment (November 13, 2024)	After follow-up (December 24, 2024)
Bilirubin direct	0.72 mg/dL	2.89 mg/dl	0.13 mg/dL
Bilirubin indirect	3.50 mg/dL	–	0.43 mg/dL
Bilirubin total	4.22 mg/dL	0.37 mg/dL	0.56 mg/dL


agilus diagnostics

REF. DOCTOR : DR. KULDEEP

ACCESSION NO : 0710X3000210
PATIENT ID : DROPF041074710
CLIENT PATIENT ID:
ABHA NO :
AGE/SEX : 50 Years Female
DRAWN : 05/10/2024 10:17:49
RECEIVED : 05/10/2024 10:18:04
REPORTED : 05/10/2024 11:59:18

Test Report Status Final

Test	Results	Biological Reference Interval	Units
BIOCHEMISTRY			
LIVER FUNCTION PROFILE, SERUM			
BILIRUBIN, TOTAL	4.22 High	0.1 - 1.2	mg/dL
BILIRUBIN, DIRECT	0.72 High	0.0 - 0.3	mg/dL
BILIRUBIN, INDIRECT	3.50 High	0.1 - 1.0	mg/dL
TOTAL PROTEIN	7.1	6.0 - 8.3	g/dL
ALBUMIN	4.3	3.2 - 5.0	g/dL
GLOBULIN	2.8	2.0 - 4.1	g/dL
ALBUMIN/GLOBULIN RATIO	1.5	1.0 - 2.1	RATIO
ASPARTATE AMINOTRANSFERASE (AST/SGOT)	19	0 - 45	U/L
ALANINE AMINOTRANSFERASE (ALT/SGPT)	21	0 - 45	U/L
ALKALINE PHOSPHATASE	79	39 - 118	U/L
GAMMA GLUTAMYL TRANSFERASE (GGT)	21	0 - 50	U/L
LACTATE DEHYDROGENASE	544 High	200 - 450	U/L

Interpretation(s)
LIVER FUNCTION PROFILE, SERUM:
Bilirubin is a yellowish pigment found in bile and is a breakdown product of normal heme catabolism. Bilirubin is excreted in bile and urine, and elevated levels may give yellow discoloration in jaundice.**Elevated levels** results from increased bilirubin production (eg, hemolysis and ineffective erythropoiesis), decreased bilirubin excretion (eg, obstruction and hepatitis), and abnormal bilirubin metabolism (eg, hereditary and neonatal jaundice). Conjugated (direct) bilirubin is elevated more than unconjugated (indirect) bilirubin when there is some kind of blockage of the bile ducts like in Gallstones getting into the bile ducts, tumors &Scarring of the bile ducts. Increased unconjugated (indirect) bilirubin may be a result of Hemolytic or pernicious anemia, Transfusion reaction & a common metabolic condition termed Gilbert syndrome, due to low levels of the enzyme that attaches sugar molecules to bilirubin.
AST is an enzyme found in various parts of the body. AST is found in the liver, heart, skeletal muscle, kidneys, brain, and red blood cells, and it is commonly measured clinically as a marker for liver health. AST levels increase during chronic viral hepatitis, blockage of the bile duct, cirrhosis of the liver,liver cancer,kidney failure,hemolytic anemia,pancreatitis,hemochromatosis. AST levels may also increase after a heart attack or strenuous activity.ALT test measures the amount of this enzyme in the blood.ALT is found mainly in the liver, but also in smaller amounts in the kidneys,heart,muscles, and pancreas.It is commonly measured as a part of a diagnostic evaluation of hepatocellular injury, to determine liver health.AST levels increase during acute hepatitis,sometimes due to a viral infection,ischemia to the liver,chronic hepatitis,obstruction of bile ducts,cirrhosis.
ALP is a protein found in almost all body tissues.Tissues with higher amounts of ALP include the liver,bile ducts and bone.Elevated ALP levels are seen in Biliary obstruction, Osteoblastic bone tumors, osteomalacia, hepatitis, hyperparathyroidism, Leukemia, Lymphoma, Pagets disease,Rickets,Sarcoidosis etc. Lower-than-normal ALP levels seen in hypophosphatasia,Malnutrition,Protein deficiency,Wilsons disease.
GGT is an enzyme found in cell membranes of many tissues mainly in the liver,kidney and pancreas.It is also found in other tissues including intestine,spleen,heart, brain and seminal vesicles.The highest concentration is in the kidney,but the liver is considered the source of normal enzyme activity.Serum GGT are obstructive liver disease,high alcohol consumption and use of enzyme-inducing drugs etc.
Total Protein also known as total protein,is a biochemical test for measuring the total amount of protein in serum.Protein in the plasma is made up of albumin and globulin.Higher-than-normal levels may be due to:Chronic inflammation or infection,including HIV and hepatitis B or C,Multiple myeloma,Waldenstroms syndrome,Protein-losing enteropathy etc.
Albumin is the most abundant protein in human blood plasma.It is produced in the liver.Albumin constitutes about half of the blood serum protein.Low blood albumin levels (hypoalbuminemia) can be caused by:Liver disease like cirrhosis of the liver, nephrotic syndrome,protein-losing enteropathy,Burns,hemodilution,increased vascular permeability or decreased lymphatic clearance,malnutrition and wasting etc

Page 1 Of 2

Dr.Sanjeew Kumar
Consultant - Pathologist &
Laboratory Head

View Details View Report

ULR No.775000009563970-0710

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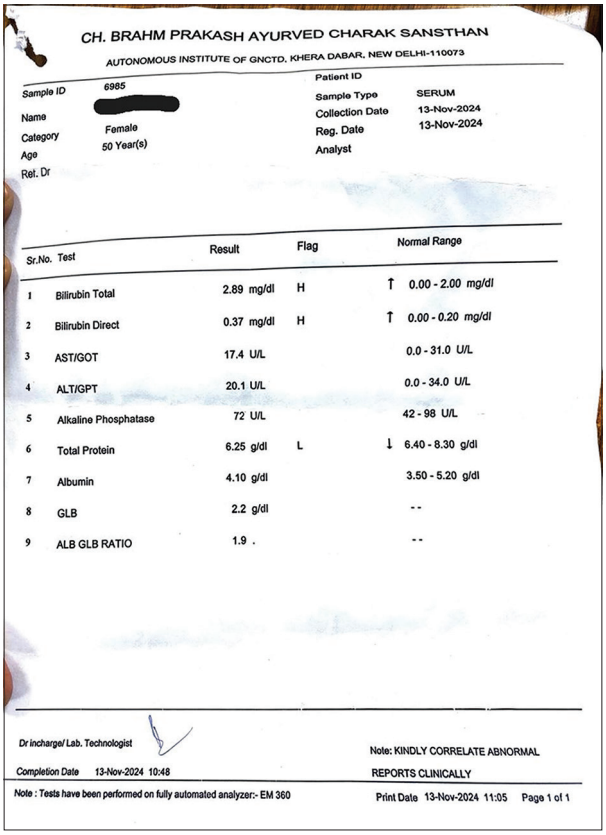
Tel : 7260813491
Email : customercare.koderma@agilus.in

Figure 1: Before treatment (October 05, 2024)


CH. BRAHM PRAKASH AYURVED CHARAK SANSTHAN
AUTONOMOUS INSTITUTE OF GNCTD, KHERA DABAR, NEW DELHI-110073

Sample ID 6985
Name
Category Female
Age 50 Year(s)
Rel. Dr

Patient ID
Sample Type SERUM
Collection Date 13-Nov-2024
Reg. Date 13-Nov-2024
Analyst

Sr.No.	Test	Result	Flag	Normal Range
1	Bilirubin Total	2.89 mg/dl	H	↑ 0.00 - 2.00 mg/dl
2	Bilirubin Direct	0.37 mg/dl	H	↑ 0.00 - 0.20 mg/dl
3	AST/GOT	17.4 U/L		0.0 - 31.0 U/L
4	ALT/GPT	20.1 U/L		0.0 - 34.0 U/L
5	Alkaline Phosphatase	72 U/L		42 - 98 U/L
6	Total Protein	6.25 g/dl	L	↓ 6.40 - 8.30 g/dl
7	Albumin	4.10 g/dl		3.50 - 5.20 g/dl
8	GLB	2.2 g/dl		--
9	ALB GLB RATIO	1.9		--

Dr incharge/ Lab. Technologist

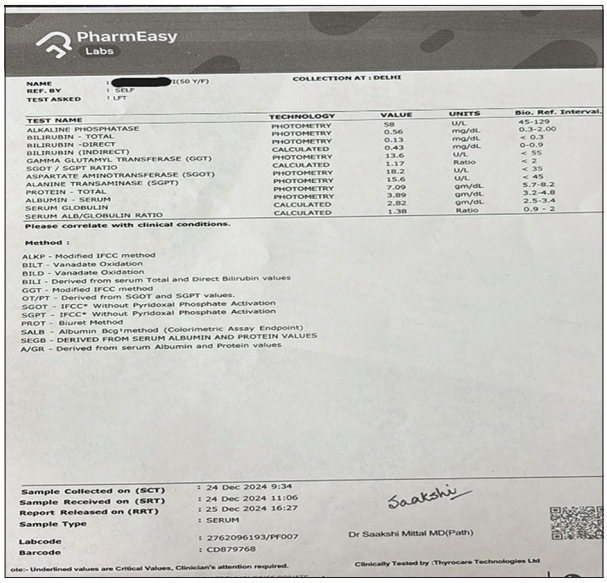
Note: KINDLY CORRELATE ABNORMAL REPORTS CLINICALLY

Completion Date 13-Nov-2024 10:48

Note : Tests have been performed on fully automated analyzer:- EM 360

Print Date 13-Nov-2024 11:05 Page 1 of 1

Figure 2: After treatment (November 20, 2024)


PharmEasy Labs

NAME : (50 Y/F)
REF. BY : SELF
TEST ASKED : LFT
COLLECTION AT : DELHI

TEST NAME	TECHNOLOGY	VALUE	UNITS	Bio. Ref. Interval
ALKALINE PHOSPHATASE	PHOTOMETRY	58	U/L	45-129
BILIRUBIN - TOTAL	PHOTOMETRY	0.56	mg/dL	0.3-2.00
BILIRUBIN -DIRECT	PHOTOMETRY	0.13	mg/dL	< 0.3
BILIRUBIN (INDIRECT)	CALCULATED	0.43	mg/dL	0-0.9
GAMMA GLUTAMYL TRANSFERASE (GGT)	PHOTOMETRY	13.6	U/L	< 55
SGOT / SGPT RATIO	CALCULATED	1.17	Ratio	< 2
ASPARTATE AMINOTRANSFERASE (SGOT)	PHOTOMETRY	18.2	U/L	< 35
ALANINE TRANSAMINASE (SGPT)	PHOTOMETRY	15.6	U/L	< 45
PROTEIN - TOTAL	PHOTOMETRY	7.09	gm/dL	5.7-8.2
ALBUMIN - SERUM	PHOTOMETRY	3.89	gm/dL	3.2-4.8
SERUM GLOBULIN	CALCULATED	2.82	gm/dL	2.5-3.4
SERUM ALB/GLOBULIN RATIO	CALCULATED	1.38	Ratio	0.9 - 2

Please correlate with clinical conditions.

Method :
ALKP - Modified IFCC method
BILT - Vanadate Oxidation
BILD - Vanadate Oxidation
BILI - Derived from serum Total and Direct Bilirubin values
GGT - Modified IFCC method
OT/PT - Derived from SGOT and SGPT values.
SGOT - IFCC* Without Pyridoxal Phosphate Activation
SGPT - IFCC* Without Pyridoxal Phosphate Activation
PROT - Biuret Method
SALB - Albumin BCG method (Colorimetric Assay Endpoint)
SEGB - DERIVED FROM SERUM ALBUMIN AND PROTEIN VALUES
A/GR - Derived from serum Albumin and Protein values

Sample Collected on (SCT) : 24 Dec 2024 9:34
Sample Received on (SRT) : 24 Dec 2024 11:06
Report Released on (RRT) : 25 Dec 2024 16:27
Sample Type : SERUM
Labcode : 2762096193/PF007
Barcode : CD879768

Saakshi
Dr Saakshi Mittal MD(Path)

Clinically Tested by :Thyrocare Technologies Ltd

ote:- Underlined values are Critical Values, Clinician's attention required.

Figure 3: Follow-up (December 24, 2024)