Case

Dr Piyush Tailor
Professor and Head
Department of Biochemistry
Government Medical College
Bhavnagar

45 years male, working in **petro-chemical company** as labour since last 10 years, came to OPD with complain of **weakness and breathlessness** on straining =. On examination , it is found that he has **85 kg weight** and 168 cm height.

Clinician asked for some routine investigation. Which are follows.

- Haemoglobin – 9.0 gm%
- FBS – 115 mg%
- PP2BS – 143 mg%
- Creatinine – 0.9 mg%
- Urea – 25 mg%
- ALT – 15 IU/L

Clinician advice for some medication with **life style modification** with

- Increase intake of green-leaf vegetables
- Low carbohydrate ,
- High protein diet and
- Medication which contain Iron, Vitamin-B12 and Folic acid

On follow up after 3 months, with **no improvement** in clinical features as well as haemoglobin level but urea level increased. But weight reduced to 80 kg. So clinical advised to stop all these medicine and following investigation

- Serum Total & Direct Billirubin - Normal
- Haemoglobin Electrophoresis – Normal

Clinical advice to start **BAL-British Anti-Lewisite** (Chelating agent)

Question

Q-1 Why haemoglobin level did not increased after 3 months of treatment with iron, folic acid and vitamin-b12 supplementation ?

Q-2 What can be biochemical reason for increase serum urea level ?

Q-3 What will be BMI for this patient?

Q-4 Why clinician advice for haemoglobin electrophoresis in this patient?

Q-5 What is reason for advising deferoxamine (chelating agent) to patient? What is biochemical mechanism for same ?

Case -

- 25 years **marathon runner** - athletes consulted physician to increase their strength and increase their running capacity. In history clinician asked about family history. Athletes told that he has strong family history of **obesity and myocardial infarction**, and it was the main motive for him to start life style modification and running to maintain good health. Clinician asked his personal history about study, job and diet pattern and advice for following routine investigation. **BMI is 24**.
- Athletes were taking **creatine powder with protein powder** during muscle strength training.
- Athletes that **how he can reduce calf pain** which occurs after few kilometer runs.

Athletes that how he can reduce calf pain which occurs after few kilometer runs.

- Haemoglobin - Normal
- Cholesterol - Normal
- Homocysteine - High
- HbA1c - Normal
- ALT - Normal
- Creatinine - Normal

Clinician advice for

- High Protein diet
- Arginine supplement
- Folic acid , Vitamin-B12 and Vitamin-B6
- Plenty of carbohydrate diet prior to three days of marathon run
- Plenty of water prior to marathon
- Frequent intake of plenty of water during marathon

Question

- How does arginine helps to marathon runner ?
- What is role of folic acid , vitamin-B12 and vitamin-B6 in this athletes?
- How does creatine power help to improve athlete’s performance?
- Why serum creatinine is normal in him, even athletes is taking creatine powder ?
- What may be reason for calf pain which occurs after few kilometer runs ?
- How does water intake water intake reduce chances of calf pain ?

Case

25 years male patient come in OPD with **low grade fever** and **weakness** since 5 days. On history , he revealed that he is taking **paracetamol 4-5 times a day** since last 5 days. He complain about **nausea, abdominal heaviness (fullness) and loss of appetite.**

Clinician examined and found :

- **Temperature** – 100 Fahrenheit
- **Pulse** – 96 / min
- **Blood Pressure** – 100 / 70 mmHg
- **Throat** – Clear. No Any Congestion
- **Tongue** – Pink and Dry
- **Conjunctiva** – Red Congested and Dry
- **Sclera** – Icterus (Yellowish)

- **Clinician Asked for Investigation**

Hematology Investigation

- Hemoglobin – 15 gm%
- WBC – 4,000 cells per cu.mm
- Platelet Cell – 1,20,000 cell per microolitre
- PCV (hematocrits)– 55 %
- Peripheral Smear – No Any Significant Finding

Biochemistry Investigation

- ALT – 150 IU/L
- Creatinine – 1.5 mg%
- Total Bilirubin – 3.0 mg%
- Direct Bilirubin – 2.0 mg%
- Indirect Bilirubin – 2.0 mg %
- LDH – 600 IU/L

Serology Investigation

- Dangue IgM – Positive
- Dangue Antigen - Positive

Clinician advice for following management of The Case

- Injection **Normal Saline** 1 Litre – in day care unit
- After Normal Saline - Blood Pressure = 120/80 mm Hg
- Clinician asked patient to **Go Home** with following advice
  - Tape Water Sponging for Fever
  - Plenty of Water Intake
  - Plenty of Carbohydrate Food
  - Avoid taking paracetamol
  - Avoid Fatty food
  - Tab Pantoprazol 40 mg (Proton Pump Inhibitor)
  - Tab Multivitamins

Follow up next day with following investigation

- Platelet count
- PCV
- Serum Creatinine

Question

1. What is reason for nausea and loss of appetite in this case?
2. What is biochemical explanation for high ALT ?
3. Justify type of jaundice in this case with pathogenesis.
4. What is biochemical explanation for high creatinine?
5. What is clinical unitality of serum LDH in this case ?
6. What other investigation should be monitor to know prognosis of this patient ?
7. What is role of proton pump inhibitor ?
8. Why clinician asked platelet count , PCV (hematocrits) and creatinine during follow up ?