

**A STUDY OF CLINICAL PROFILE OF DENGUE PATIENTS WITH SPECIAL
REFERENCE TO HEPATIC DYSFUNCTION IN A TERTIARY CARE HOSPITAL IN
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ABSTRACT

Background: Dengue is a globally important arboviral infection transmitted by Aedes mosquitoes that endangers an estimated 2.5 billion people and represents a rapidly growing public health problem. There are between 50 and 100 million infections each year, with approximately 500,000 cases admitted to hospital with severe and potentially life threatening disease.^[1] In our prospective study, 100 consecutive cases of dengue patients were studied. Patient underwent detailed clinical evaluation followed by laboratory investigations with special reference to hepatic dysfunction. **Results:** Male to female ratio was 2.3:1. Majority of the cases having dengue infection belong to the age group of 15-30 years. All the cases had fever (100%). Next common symptom in our study being vomiting (39%), headache (26%), abdominal pain (25%) and joint pain (20%). In our study, 32% clinically had hepatomegaly. Nearly 93% of the patients had thrombocytopenia. About 95% had deranged SGOT levels of which 22% had two and three times the normal range and 51% had more than three times the normal. Also 87% patients had deranged SGPT of which 41% and 21% had two and three times the normal levels and 25% had more than three times the normal level **Conclusion:** In adult patients with dengue infection, hepatic injury is nearly universal. Although in large majority of the patients it is asymptomatic, in some patients, it leads to clinical manifestations of liver disease keywords – Dengue, Hepatic dysfunction, Thrombocytopenia.

INTRODUCTION

Dengue fever (DF) is an acute febrile viral disease frequently presenting with headaches, bone or joint and muscular pains, rash as symptoms.^[2]

Infection of human beings with any dengue virus can result in two well defined syndromes (dengue fever and dengue hemorrhagic fever/dengue shock syndrome [DHF/DSS]), a range of intermediate responses, or no clinical response at all^[3]

Dengue Fever and Dengue Hemorrhagic Fever are caused by the four dengue viruses DEN 1, 2, 3, and 4, which are closely related antigenically. Infection with one serotype provides life-long immunity to that virus but not to the others. Dengue viruses are maintained in an urban transmission cycle in tropical and subtropical areas area by the mosquito *Aedes aegypti*, a species closely associated with human habitation.

The dengue virus, an RNA virus, belongs to the Flaviviridae family. The virus can infect many cell types and cause diverse clinical and pathological effects. Its

main effects are on the vascular, muscular and haematological systems.^[4]

World Health Organization (WHO) experts agreed that dengue is one disease entity with different clinical presentations and often with unpredictable clinical evolution and outcome.

The resurgence of dengue has been observed in India and dengue outbreaks have been frequently reported from different parts of the country in both urban and rural populations, with studies correlating increased dengue incidence with the monsoon and post monsoon season.^[5]

AIMS AND OBJECTIVES

To study clinical, laboratory profile in dengue patients with special reference to hepatic dysfunction and its correlation with disease severity and outcome.

Methodology

This is a prospective study of 100 consecutive dengue patients admitted in our hospital. The data was collected from patients admitted to S.D.M Medical College and

Hospital with fever more than 38.5°C and NS1 and IgM dengue positive during the period of 2015-2016.

A detailed history and a thorough clinical examination was done for all the cases.

Data was collected in a prewritten proforma.

All the cases were subjected to following investigations:

- 1) NS1 and IgM dengue using rapid chromatographic strip test.
- 2) Complete blood count- Hb, TC, DLC, Platelet count, RBS.
- 3) Liver function test- Total Serum Bilirubin, Direct serum bilirubin, indirect serum bilirubin, ALT, AST, alkaline phosphatase, serum albumin, serum globulin and total proteins.
- 4) Renal Function Test.
- 5) Prothrombin time(P.T), INR.
- 6) QBC- MP.
- 7) WIDAL test.
- 8) Anti HCV.
- 9) HbSAg.
- 10) CXR.
- 11) Ultrasound abdomen and thorax.
- 12) E.C.G.

Inclusion criteria: Patients included in the study were only the serologically confirmed cases of dengue reactive to either NS1 antigen or IgM antibody or both NS1 antigen and IgM antibody.

Exclusion criteria

- 1) Dengue fever with any other specified co-infection.
- 2) Pre existing liver disorders like hepatitis B, hepatitis C,
- 3) Those on hepatotoxic drugs.
- 4) Those with ultrasonographic evidence of chronic liver disease and
- 5) Those with previous history of jaundice will be excluded from the study.

Statistical analysis

Data collected was analyzed and presented as frequency, percentage; mean and standard deviation (S.D). Chi square was used to find an association between variables.

P value < 0.05 was taken as statistically significant.

Data entry was done using Microsoft Excel and analysis was carried out with the help of Statistical Package for Social Sciences (SPSS Statistics21).

Table 1.1
Global reports of dengue and dengue haemorrhagic fever, 1956–1995^a

Time interval	No. years	No. cases	Mean no. cases per year
1956–1980	25	1547760	61910
1981–1985	5	1304305	260861
1986–1990	5	1776140	355228
1991–1995	5	1704050	340810

Figure 1: The general distribution of dengue fever/ dengue haemorrhagic fever , 1975-1996

RESULTS

Sex Distribution

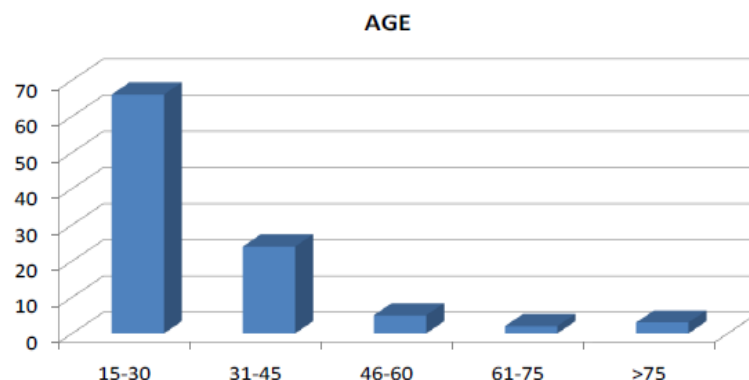
TABLE 2: Gender distribution of study population

Sex	Number of patients	Percentage
Male	70	70
Female	30	30
TOTAL	100	100

The study included 70 males and 30 females .

Table-3: Age Wise Distribution

Age	15-30y	31-45y	46-60y	61-75	>75
Number	66	24	5	2	3

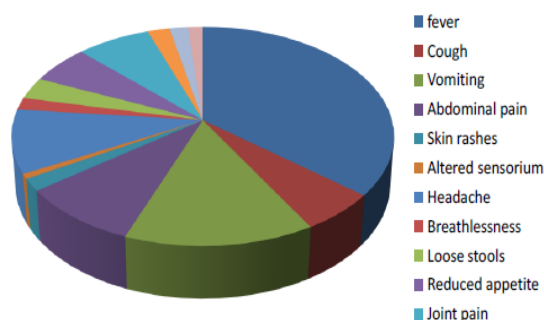


Graph 1: showing distribution of patients according to age.

Table-4: Analysis of Signs and Symptoms.

	Present	Percentage
Fever	100	100.0
Cough	16	16.0
Vomiting	39	39.0
Abdominal pain	25	25.0
Skin rashes	5	5.0
Altered sensorium	2	2.0
Headache	26	26.0
Breathlessness	5	5.0
Loose stools	9	9.0
Reduced appetite	16	16.0
Joint pain	20	20.0
Bleeding	6	6.0
Convulsion	5	5.0
Burning micturition	4	4.0
Shock	6	6.0

The table shows that all patients presented with fever (100%) and the most common symptom patients presented was vomiting (39%), headache (26%), abdominal pain (25%), joint pain (20%), the least common symptom was shock (6%) and altered sensorium (2%).

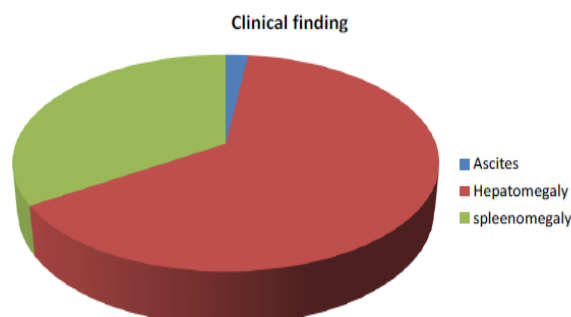


Graph 2: Distribution of signs and symptoms

Table-5: Clinical findings.

Hepatomegaly	Frequency (N=100)	Percentage
Yes	32	32.0
No	68	68.0
Splenomegaly		
Yes	17	17.0
No	83	83.0
Ascites		
Yes	1	1.0
No	99	99.0

The tables above show that in the form of hepatomegaly was seen in 32 percent and splenomegaly in 17 percent and clinically only 1 patient had ascites.

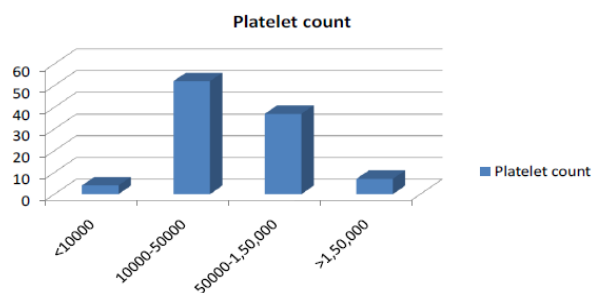


Graph 3: Distribution of organomegaly and ascites

Table 6: Platelet Count.

Platelet	Frequency	Percentage
< 10000	4	4.0
10000-50000	52	52.0
50000-150000	37	37.0
>150000	7	7.0
Total	100	100.0

This study showed that 52 percent of patients had platelet counts less than 50000.



Graph 4: Distribution of platelet counts

Table 9: Ultrasound findings.

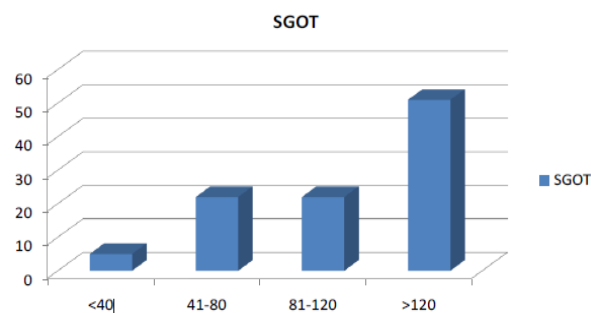
USG findings	Frequency	Percentage
Ascites	14	14.0
Hepatomegaly	25	25.0
Splenomegaly	20	20.0
Pleural effusion	14	14.0
Gall bladder wall edema	11	11.0

The table shows that ultrasound showed signs of signs of oragnomegaly and plasma leakage in the form of hepatomegaly(25%), splenomegaly(20%), pleural effusion(14%) and ascites(14%). Gall bladder oedema was also seen in 11% of the patients.

Table 10: SGOT Levels.

SGOT level	Frequency	Percentage
7-40	5	5.0
41-80	22	22.0
81-120	22	22.0
>120	51	51.0
Total	100	100.0

This table shows 95% of patients had raised SGOT levels, of which 22% had twice the normal levels and 51 % had three times the normal of SGOT levels.

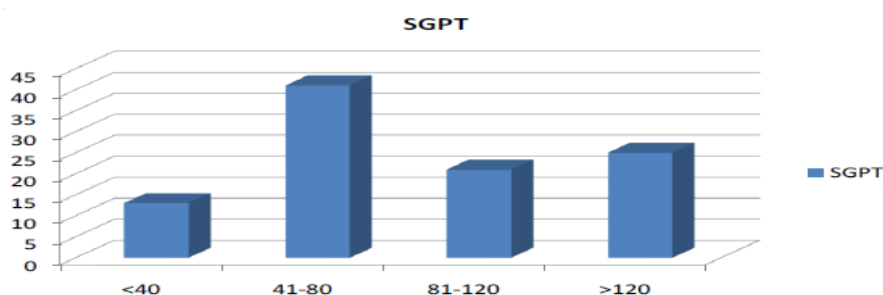


Graph 6: Showing distribution of SGOT levels

Table 11: SGPT Levels.

SGPT level	Frequency	Percentage
5-50	13	13.0
51-80	41	41.0
81-120	21	21.0
>120	25	25.0
Total	100	100.0

This table shows 87% of patients had raised SGPT levels of which 21% had twice the normal level and 25% had three times the normal.



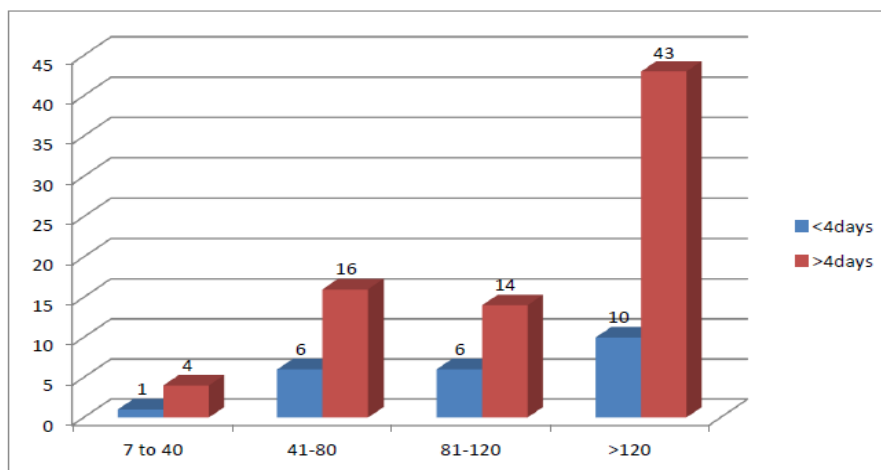
Graph 7: showing distribution of SGPT levels

Table 12: Duration of stay in patients with raised SGOT.

SGOT	<4 Days		>4 Days		Total	
	NO	Percent	No	Percent	NO	percent
7-40	1	20	4	80	5	5
41-80	6	27.2	16	72.72	22	22
81-120	6	30	14	70	20	20
>120	10	18.86	43	81.13	53	53
Total	23	23	77	77	100	100

Chi square-0.721, P value-0.868

Patients with increased level of SGOT had longer duration of stay in the hospital but the finding was not statistically significant.



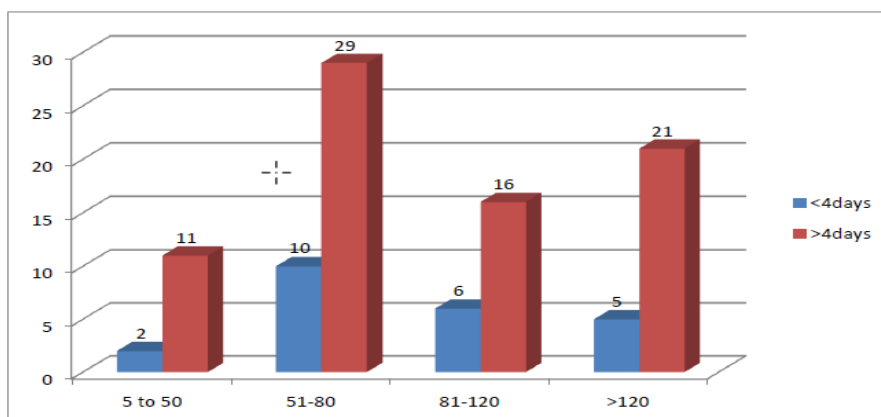
Graph 8: showing correlation between duration of stay and SGOT levels.

Table 13: Duration of stay in patients with raised SGPT.

SGPT	< 4 days		>4 days		Total	
	No	Percent	No	Percent	No	Percent
5-50	2	15.38	11	84.61	13	13
51-80	10	25.64	29	74.36	39	39
81-120	6	27.27	16	72.72	22	22
>120	5	19.23	21	80.77	26	26
Total	23	23	77	77	100	100.00

Chi square-0.245, P value- 0.97

Patients with increased level of SGPT had longer duration of stay in the hospital but the finding was not statistically significant



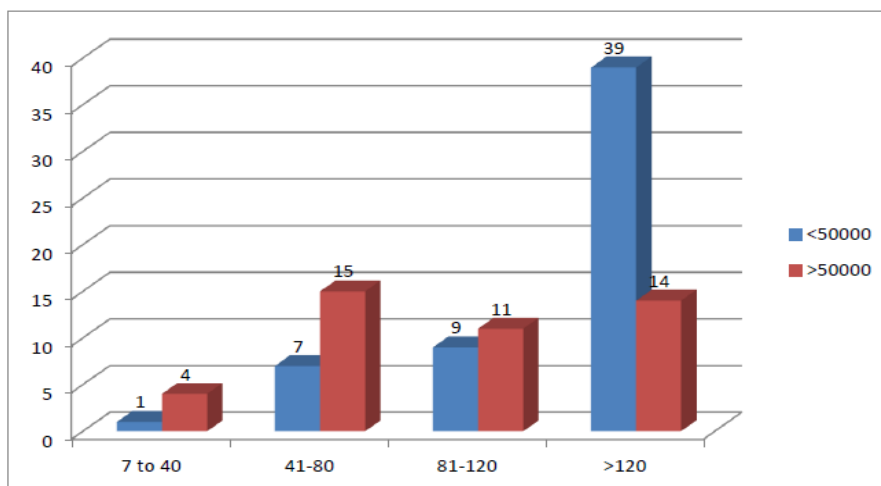
Graph 9: showing correlation between duration of stay and SGPT levels

Table 14: Thrombocytopenia and raised SGOT levels.

SGOT	<50,000		>50,000		Total	
	No	Percent	No	Percent	No	Percent
7-40	1	20	4	80	5	5
41-80	7	31.81	15	68.18	22	22
81-120	9	45	11	55	20	20
>120	39	73.58	14	26.41	53	53
Total	56	56	44	44	100	100

Chi square -12.2, P value-0.006

The above table shows that there is a positive correlation between SGOT levels and thrombocytopenia such that severe SGOT dysfunction and severe thrombocytopenia.



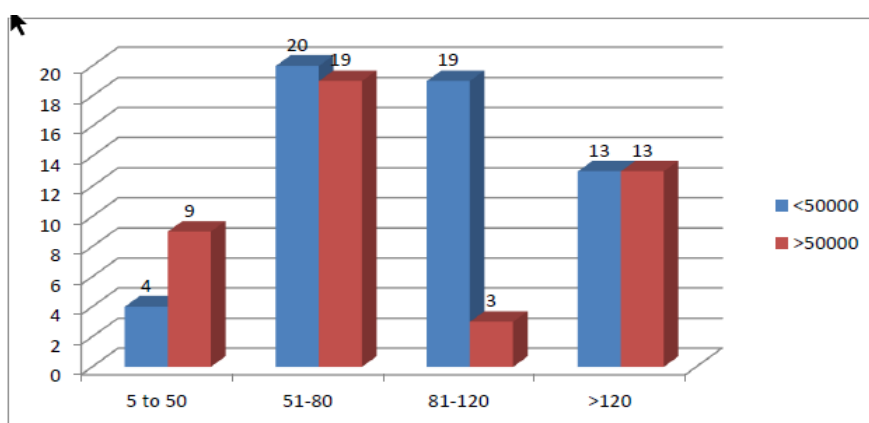
Graph 10: showing correlation between thrombocytopenia and SGOT levels

Table 15: Thrombocytopenia and raised SGPT levels

SGPT	<50000		>50000		Total	
	No.	Percent	No.	Percent	No.	Percent
5-50	4	30.76	9	69.23	13	13
51-80	20	51.28	19	48.71	39	39
81-120	19	86.36	3	13.63	22	22
>120	13	50	13	50	26	26
Total	56	56	44	44	100	100

Chi square -9.655, P value- 0.0217

The above table shows that there is a positive correlation between SGPT levels and thrombocytopenia such that severe SGPT dysfunction and severe thrombocytopenia.



Graph 11: showing correlation between thrombocytopenia and SGPT levels

DISCUSSION

Dengue infection is still is one of the most common infectious diseases throughout the world including our country. The incidence of this infection has increased rapidly over the last few years.

According to WHO about two fifths of the world population is at risk. Many regions of our country witness epidemics of this infection particularly during the monsoon period.

The classical Dengue fever is characterized by fever, headache, joint pains and bodyache However off late Dengue fever is presenting with atypical features and complications with multiple organ dysfunction.

Liver involvement is one such atypical manifestation and is characterized by right hypochondrium pain, hepatomegaly, jaundice, and elevated aminotransferase levels.

Elevated AST and ALT levels have been associated with bleeding and DHF.

Liver failure has been recognized as a complication and unusual manifestation of dengue.

Biopsy specimens obtained from patients with DSS who died have shown a variety of patterns including microvesicular steatosis, hepatocellular necrosis with associated councilman bodies, Kupffer cell destruction, and inflammatory infiltrates at the hepatic portal tracts.

A total of 100 patients admitted to our hospital with history of fever and who turned out to be Dengue NS1 and IgM positive were studied.

In this study a total of 100 patients were studied, of which 70 were males (70%) and 30 were females(30%) and the ratio being 2.3:1 which was comparable to study done by Shukla et al where males were 74.2% and females were 25.7%, ratio being 2.8:1.^[6]

Also comparable to study conducted by Gogna et al where males constituted 80.7% and females 19.3%, ratio being 4.1:1.^[7]

Analysis of signs and symptoms in the present study showed that fever was the most common symptom and was present in all patients (100%). In the study conducted by Shukla et al, fever was present in all patients (100%), also in studies conducted by Gogna et al and Mandal et al fever was present in 100% of patients.^[6,7,8]

□□Next common symptom in our study being vomiting and was seen in 39% of the patients. In study conducted by Shukla et al 80% had vomiting. In a study conducted by Singh R et al and Chatterjee et al incidence of vomiting was 11.4% and 24% respectively.^[9,10]

□□In our study headache was present in 26% of the patients. In a study conducted by Mandal et al 62.1% had headache.^[8] Study conducted by Singh R et al showed headache in 80% of the patients.^[9]

□□Abdominal pain and joint pain were present in 25% and 20% patients respectively in our study. In a study conducted by Singh R et al abdominal pain was present in 13.6% of the patients.^[11] In Chatterjee et al study 24% had abdominal pain.^[10]

□□In our study, 32% clinically had hepatomegaly whereas 17.6% had hepatomegaly in a study conducted by Daniel et al.^[11]

□□Ultrasonography conducted in our study, showed 14% with ascites, 25% with hepatomegaly, 20% with splenomegaly and 14 % with pleural effusion which was comparable to study conducted by Daniel et al where 12%had ascites and 13.2 % had pleural effusion.^[139] In a study conducted by Shukla et al, 60% had ascites, 50% had hepatomegaly, 20% had splenomegaly and 15% had pleural effusion.^[6]

In our study 93% of the patients had thrombocytopenia which is comparable to study conducted by Singh R et al where 97.1 % had thrombocytopenia^[137] In our study 52% of the patients had platelet counts less than 50,000. In study conducted by Gogna et al and Daniel et al it was seen in 37.84% and 47.4% respectively^[7,11]

□□In our study 95% had deranged SGOT levels of which 22% had two and three times the normal range and 51% had more than three times the normal. Also 87% patients had deranged SGPT of which 41 % and 21% had two and three times the normal levels and 25% had more than three times the normal level. This is comparable to study conducted by Shukla et al where 100% had deranged SGOT and 95% had deranged SGPT.^[6]

CONCLUSION

□□The present study was conducted to study the hepatic dysfunction in patients with dengue fever.

□□It is one of the atypical manifestations of Dengue fever.

□□In the present study both SGOT and SGPT were deranged but SGOT was much more elevated than SGPT. This correlated with disease severity in terms of vascular leakage and severe thrombocytopenia.

□□In adult patients with dengue infection, hepatic injury is nearly universal.

□□Although in large majority of the patients it is asymptomatic, in some patients it leads to clinical manifestations of liver disease.

□□Care must be taken to not make a mistaken diagnosis of viral hepatitis.

SUMMARY

1. A total of 100 patients admitted to our hospital with fever (>38.50F) and IgM Dengue positive were studied.
2. Male to female ratio was 2.3:1.
3. Majority of the cases having dengue infection belong to the age group of 15-30 years.
4. All the cases had fever (100%). Next common symptom in my study being vomiting (39%), headache (26%), abdominal pain (25%) and joint pain (20%).
5. In my study, 32% clinically had hepatomegaly. Ultrasonography conducted in my study, showed 14% with ascites, 25% with hepatomegaly, 20% with splenomegaly and 14 % with pleural effusion.
6. 93% of the patients had thrombocytopenia.
7. 95% had deranged SGOT levels of which 22% had two and three times the normal range and 51% had more than three times the normal. Also 87% patients had deranged SGPT of which 41 % and 21% had two and three times the normal levels and 25% had more than three times the normal level.

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