

## Studies with “Liv.52”

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The present trial on Liv.52 (The Himalaya Drug Co.) has been carried out in eight cases of liver enlargements and 12 cases of malnutrition to assess its therapeutic response. In all these cases Liv.52 was used as an important adjunct to the standard treatment, composed of multi-purpose food, treatment of associated infection with suitable antibiotics and administration of vitamins as and where indicated. In no case was Liv.52 used alone considering the established role of protein in the therapy of malnutrition.

The following scheme of study has been adopted in this first instalment of 20 cases in this series. Name, age, sex, socio-economic condition, family history, especially with regard to tuberculosis in the family. Dietetic history was taken in great detail, breast-feeding duration, time of weaning, solids—time of introduction, type of diet given.

After detailed history taking, clinical examination of each case was done in detail. General examination included, presence or absence of oedema, hair and skin changes, degree of anaemia, record of weight, examination of mouth and oral cavity. Systemic examination included examination of CVS, chest and abdomen, and CNS.

Examination of abdomen was done carefully to find out enlargement of liver and presence or absence of free fluid in the peritoneal cavity. Examination of chest was done to reveal any acute or chronic infection.

The following routine and special investigations were done:

1. Examination of Stool – Routine – for detecting presence of any parasite or worm.
2. Examination of Urine – Routine.
3. Examination of Blood: Total, R.B.C., Hb%, Total & Differential count of W.B.C.
4. Tuberculin test.
5. Serum Protein estimation – Albumin-Globulin level.
6. X-ray chest P.A. view wherever indicated.

In assessing the therapeutic response the following clinical criteria were observed, viz., improvement in the weight of the patient, regression of changes in hair and skin to normalcy and improvement in appetite and power of digestion, amelioration of oedema fluid. Depending upon the improvement, therapeutic response was graded as good, fair and poor.

Out of 12 cases of malnutrition studied, two cases were of Marasmus and 10 cases of Kwashiorkor. The cases ranged between 1 year to seven years of age. There were five male and seven female children in this series. A majority of the cases belonged to the low socio-economic class. The chief presenting features were looseness of bowels, oedema, generalised swelling of the whole body, different grades of skin changes from mild roughness to severe degree of dermatoses and pigmentations, hair changes — almost brown discolouration in a few cases — and, mild to severe

degree of avitaminosis. Serum Proteins level ranged between 3.2 to 5.8 gms per cent. Albumin/globulin ratio was markedly disturbed.

<b>Table No. 1: Showing age incidence in cases of malnutrition</b>		
Age	No. of cases	Percentage
0 to 1 year	Nil	0%
1 to 2 years	4	33.3%
2 to 3 years	6	50.0%
Over 3 years	2	16.6%

<b>Table No. 2: Showing sex incidence in cases of Malnutrition</b>		
Sex	No. of cases	Percentage
Male	5	41.6%
Female	7	58.4%

<b>Table No. 3: Showing socio-economic status in case of malnutrition</b>		
Class	No. of cases	Percentage
Poor	11	91.6%
Middle	1	8.4%
Rich	Nil	Nil

<b>Table No. 4: Showing presenting features in cases of malnutrition</b>		
Presenting features	No. of cases	Percentage
Diarrhoeas	12	100%
Oedema	10	83.3%
Skin changes	9	75%
Liver enlargement	10	83.3%
Hair changes	4	33.3%

<b>Table No. 5: Showing serum proteins levels in cases of malnutrition</b>		
Total Serum Proteins in gm/100 cc	No. of cases	Percentage
3 to 4 gm.	3	25.0%
4 to 5 gm.	3	25.0%
Over 5 gm.	6	50.0%

Out of eight cases of liver enlargement five were of cirrhosis of liver, three of infective hepatitis and one had leukaemia. All patients belonged to the low-income group. Detailed case histories are given.

<b>Table No. 6: Showing age incidence in cases of Liver Enlargement</b>		
Age	No. of cases	Percentage
0 to 1 year	0	0
1 to 2 years	1	12.5%
2 to 3 years	2	25.0%
Over 3 years	5	62.5%

<b>Table No. 7: Showing sex incidence in cases of Liver Enlargement</b>		
Sex	No. of cases	Percentage
Male	7	87.5%
Female	1	12.5%

Liv.52 was tried in all 12 cases of malnutrition for varying periods ranging from 2-4 weeks and the results were encouraging, judging the cases in relation to overall improvement and improvement in various symptoms. It may be mentioned here that one very significant factor which was observed was immense increase in appetite in all the cases of malnutrition in a shorter time as compared to

the control group where all other treatment, except Liv.52 was given. There was simultaneous increase in their power of digestion without bowel disturbances and consequent gain in weight.

The same observation was made in cases of infective hepatitis, where total or almost complete anorexia is the rule. As regard the effect of Liv.52 on the structure of liver and its in reversing the histological changes, it is proposed to carry out work on the histopathology of the liver before and after the treatment.

## RESULTS

Results	No. of cases	Percentage
Good	8	66.7%
Fair	4	33.3%
Poor	Nil	Nil

Types of cases	Good	Fair	Poor
Cirrhosis of liver	0	4	1
Infective hepatitis	2	1	0
Liver Enlargement (Leukaemia)	0	0	1

All the cases showed a gain in weight varying from 2 to 5 lbs. The duration of Liv.52 therapy varied from 2-4 weeks.

Case No. as mentioned in the report	Wt. in lbs. Before therapy	Wt. in lbs. After therapy	Gain in weight	Therapeutic result
9	6	8	2	Fair
10	10	14	4	Good
11	10	15	5	Good
12	28	30	2	Fair
13	18	20	2	Fair
14	22	24	2	Fair
15	26	29	3½	Good
16	20	24	4	Good
17	22	25	3	Good
18	21	24	4	Good
19	19	24	5	Good
20	20	22	2	Fair

## SUMMARY

Liv.52 has been tried along with the usual treatment in eight cases of liver enlargement of varied aetiology and 12 cases of malnutrition (Marasmus 2, Kwashiorkor 10) with encouraging results. In three cases of liver enlargement due to infective hepatitis two patients had good response and one had fair response. Of five cases of cirrhosis of liver, 4 had fair response and 1 did not respond. The patient with leukaemia did not respond at all.

In cases of malnutrition, all our patients responded most encouragingly to therapy. 66.7 per cent gave a good response and 33.3 per cent a fair response. The most significant feature of adding Liv.52 to the therapy was the immense increase in appetite and power to assimilate without bowel

disturbances in all cases of malnutrition and infective hepatitis. This was in a much shorter time than in the control group which received all other similar treatment except Liv.52.

Further studies are in progress.

*Case No. 1*

*Manish*, 2½ years was admitted with complaint of diarrhoeas 6 months, protruded abdomen 5 months, loss of appetite 1 year, past history – nothing particular; dietary and social history – nothing particular.

*On Examination*: Weight 20 lb., pulse 90/Mt., poor growth, lungs, clinically clear, CVS–NAD; liver 5F., Spleen 2F., ascites ++, venous prominence present on abdomen.

*Investigation*: Stool – NAD., Urine–NAD bile salt, bile pigment – a trace; Hb 66%, MT – negative.

*Diagnosis*: Cirrhosis of liver.

*Treatment*: Liv.52 Drops, 10% glucose, vitamins, corticoids.

*Therapeutic response*: Fair. Repeat investigations showed a fair response to therapy.

*Case No. 2*

*Ashok*, Hindu, male, 2 years, admitted for the complaint of prominent abdomen 4 months, irregular fever 4 months, oedema of legs and feet 15 days, past history – nothing particular; family – middle class with low income.

*On examination*: Weight 17 lb., looked pale, drowsy, oedematous liver 4½F., spleen just palpable, ascites +, venous prominence +++, eyes jaundiced, passed high-coloured urine.

*Investigation*: Stool – NAD, Urine – bile salt, bile pigment present, urobilinogen serum proteins – total 5.2 gm Albumin – 2.2 gm Globulin – 3.00 gm A/G – 1.14.

*Diagnosis*: Cirrhosis of liver.

*Treatment*: Liv.52, Corticosteroids, vitamins, antibiotics.

*Therapeutic response*: Poor. The child died in the hospital.

*Case No. 3*

*Brigendra Kumar*, 8 years, admitted with the complaints of swelling of the body, 4 months, ascites 6 months, scanty urine 2 months, past history – nothing particular, comes from poor class family, non-vegetarian.

*On Examination*: Weight 64 lb., looked emaciated, pale and dull, anaemia ++, oedema ++, ascites +++, glossitis present, all the superficial veins on the abdomen were engorged and enlarged liver spleen.

*Investigation*: Stool and urine – NAD, Blood – Total WBC – 17500/cmm. P-40%, L-50%, E-2%, M-8%, Total serum proteins-7.5 gm.

Albumin-1.6 gm., Globulin-4.9 gm., A/G 0.33/1.

*Diagnosis*: Cirrhosis of liver.

*Treatment*: Liv.52 with other supportive treatments.

*Therapeutic response*: Fair. Both clinically and from repeated investigations patient showed a fair response.

*Case No. 4*

*Umesh Ram*, 3 years, admitted with complaints of pain in the abdomen 1 month, dry cough 1 month, enlarged abdomen 1 year, past history – nothing particular.

*On examination*: Looked anaemic, restless, oedematous, breathless, weight 23 lb., chest - a few crepts, CVS – NAD., abdomen – few sup. Veins seen, everted umbilicus, liver 3½F., spleen just palpable.

*Investigation:* Stool – NAD, urine – NAD., Hb – 33%, MT – negative Total WBC –12400/Cmm., P-74%, L-24%, E-1%, M-1%.

*Diagnosis:* Cirrhosis of liver.

*Treatment:* Liv.52 Antibiotics, Proteins – B.T. 100 cc.

*Therapeutic response:* Fair.

#### *Case No. 5*

*Mahendra*, 8 years, was admitted with complaints of anorexia 10 days, passing high coloured urine 10 days, yellowness of eye 4 days. Past history – nothing particular.

*On examination:* Patient looked dull, anxious, jaundiced; abdomen – there was slight tenderness in rt. Hypochondrium, mild rise of temperature, chest and CVS – NAD.

*Investigation:* Plasma bilirubin. Direct 0.7 mg/100 ml. indirect 1.0 mg/100 ml. SGPT – 48 IU/Lt.

Bile salts, bile pigments present.

*Diagnosis:* Infective hepatitis.

*Treatment:* Liv.52 Drops, I.V. glucose carbohydrates.

*Therapeutic response:* Good. Marked improvement in appetite, digestion and general well being.

#### *Case No. 6*

*Gopi Ram*: 4½ years, admitted with the complaints of drowsiness, yellowness of eyes 10 days, high-colouration of urine 14 days, anorexia 14 days. Past history – nothing particular.

*On examination:* Looked drowsy, restless, superficial and deep reflexes were present, eyes and skin looked jaundiced, liver tender and enlarged, spleen not palpable.

*Diagnosis:* Infective hepatitis.

*Investigation:* Stool – NAD, urine – bile salt, bile pigment and urobilinogen present, blood – Total bilirubin – Direct 0.6 mg/100 ml., indirect 0.8 mg/100 ml.

SGPT – 40 IU/Lt.

*Treatment:* Liv.52, I.V. Glucose, corticosteroids for six weeks.

*Therapeutic response:* Fair.

#### *Case No. 7*

*Ashok Kumar*, 6 years, admitted with the complaints of hectic type of temperature 8 months, prominence of abdomen 6 months, diarrhoea 5 months, anorexia 5 months, past history – nothing particular. Social status – Middle class.

*On examination:* Looked anaemic, pale, dull, weight 60 lb., pulse 120/Mt., temperature 101°F, liver 5F., spleen 2½F., chest a few crepts, CVS-NAD.

*Investigation:* Stool – NAD, Urine – NAD blood total WBC-14350/Cmm., P-64% L-24%, E-4%, M-8% Hb-4.6 gm/100 cc., X-ray skull – NAD, X-ray chest – NAD, MT negative.

*Diagnosis:* Hepatosplenomegaly (Leukaemia).

*Treatment:* Liv.52, proteins, antibiotics, repeated blood transfusion for 2 months.

*Therapeutic response:* Poor. Ultimately the boy died.

#### *Case No. 8*

*Gayatri Devi*, 5 years 2 months, admitted with the complaints of anorexia 15 days. Pain in the abdomen 10 days, yellowness of eyes 10 days. Past history – Nothing particular.

*On examination:* Weight 40 lb. Looked anxious and dull; eyes - jaundiced; liver – palpable and slightly tender; chest – NAD. CVS–NAD.,

*Investigation:* Urine – bile salt, bile pigment and uribilinogen present, stool – NAD, SGPT – 56 IU/Lt. Total serum proteins – 4.8 gm.

*Diagnosis:* Infective hepatitis.

*Treatment:* Liv.52, I.V. glucose, carbohydrate, rich diet for 22 days.

*Therapeutic response:* Good. Very marked improvement in appetite, digestion and general well being.

*Case No. 9*

*Manju*, Hindu, female, 1 year 6 months, admitted with complaints of diarrhoea 4 months, oedema of the body 1 month, peeling of the skin 20 days, dietary history – mother's milk with occasional goat's milk for one year then put on rice, pulses, etc.

*On examination:* Hypotonia of muscles, irritable oedema of the whole body, desquamation of hyperpigmented patches of glossitis, vaginitis, lungs – a few crepts, CVS – haemic murmurs, liver – 1½F.

*Investigation:* Stool - ova of round worm, urine – a trace of albumin, MT - negative, blood – Hb–40%, Total WBC–3000/Cmm., P-67%, L-1.18%, M-4%, E-2%, plasma protein total 3.18 gm/100 cc., Albumin 1.11 gm., Globulin 2.03 gm. A/G 1:1.86

*Diagnosis:* Kwashiorkor.

*Treatment:* Liv.52, Blood transfusion 100 cc., antibiotics.

*Therapeutic response:* Fair. There was fair improvement in appetite and digestion. The patient put on 2 lb. In weight.

*Case No. 10*

*Binoy Kumar*, 1½ years, admitted with the complaints of diarrhoea 5 months, anorexia 5 months, looking dull 4 months, dietary history – mother's milk for 2 months, then cow's milk and rice and pulses. Comes from a middle class family.

*On examination:* Looked pale, dull, emaciated, looseness of skin in folds, stunted growth, weight 10 lb. Chest - a few crepts, CVS – NAD, liver – not enlarged, spleen – not palpable.

*Investigation:* Stool – NAD, Urine – NAD, blood–Hb 89 gm/100 cc. Total WBC – 17850/Cmm, P-10%, L-84%, M-4%, E-2%, serum proteins – total 5.42 gm. Albumin-2.02, Globulin-3.40, A/G 1:1.3.

*Diagnosis:* Kwashiorkor.

*Treatment:* Liv.52, vitamins and protein antibiotics 3 weeks.

*Therapeutic response:* Good. Marked improvement in appetite and assimilation of food. Patient gained 4 lb. In weight.

*Case No. 11*

*Mahesh*, 1½ years, was admitted with complaints of diarrhoea 3 months, anorexia 2 months, looseness of skin 1 month. Past history – nothing particular. Family history – nothing particular. Dietary history – mother's milk 1 year then rice, and bread. Social status: poor class.

*On examination:* Markedly wasted, apathetic, irritable, xerosis, keratomalacia, Tongue – pale and smooth. Lungs – coarse crepts all over. Liver and spleen not enlarged CVS–NAD.

*Investigation:* Stool routine – NAD, Urine – NAD, Total WBC 12500/Cmm, P-60%, L-30%, #-3%, M-7%, Plasma proteins – 5.85 gm./100 cc. albumin 1.62, Globulin–4.23.

*Diagnosis:* Marasmus

*Treatment:* Liv.52 Drops + proteins + antibiotics + Vitamins for 3 weeks.

*Therapeutic response:* Good. Marked improvement in appetite and power of digestion. Patient gained 5 lb. In weight.

*Case No. 12*

*Dukhia*, 3½ years, was admitted with complaints of diarrhoea 4 months, chest infections 3 months, swelling of the feet 1 month, weight – 28 lb. Past history and family history – nothing particular.

*On examination:* Weight 28 lb., oedema moderate; ascites ++; skin changes – dermatoses and pigmentation. Liver – 1½F; spleen – not palpable. Chest – a few crepts; Heart – NAD., Appetite – dull; Bowels – loose stools 5 to 6 times.

*Investigation:* Stool – NAD, Urine – a trace of albumin, Blood – Hb-60%, Total WBC – 13000/Cmm., P-70%, L-22%, E-4%, M-4%, Plasma Proteins Total 5.2.

*Diagnosis:* Kwashiorkor

*Treatment:* Liv.52, Antibiotics, Vitamins, Proteins for 4 weeks.

*Therapeutic response:* Fair, Though overall improvement was fair, there was marked improvement in 48 hours' time by Liv.52 administration which helped the patient in being free of symptoms and signs very quickly. Patient gained 2 lb. in weight.

#### *Case No. 13*

*Naresh*, Hindu, male, 2 years 4 months, was admitted with the complaints of diarrhoea and abdominal distension 3 months, loss of weight 3 months, oedema of body 1 month, ulceration and peeling of skin 20 days. Dietary history – Mother's milk 1 year, rice and bread after that. Social status – poor class.

*On examination:* Apathetic, irritable, hypotonia of muscles, puffiness of face skin–dry and rough, ulceration, angular stomatitis, lungs–a few crepts, CVS–NAD, Liver 2½f.

*Investigation:* Stool–NAD; Urine – NAD, Blood total 1150/Cmm., P-22%, L-70%, M-6%, E-2%, Hb. 9.5 gm./- Serum proteins – 0.02 gm./100 cc. Albumin 2.1 gm./100 cc. Globulin 2.92 gm. 100 cc., A/G 1:1.4.

*Diagnosis:* Kwashiorkor.

*Treatment:* Liv.52, Antibiotics, haematinics, proteins.

*Therapeutic response:* Fair. Enlargement of liver with all features diminished in 20 days. Gain in weight 2 lb.

#### *Case No. 14*

*Jiramati*, Hindu, female, 2 years 4 months admitted with the complaint of loss of weight 3 months, diarrhoea 2 months. Dietary history: Mother's milk for 1½ years, rice, vegetables, cow's milk. Social status–poor class.

*On examination:* Weight 22 lb., wasted, dehydrated and pale, apathetic, irritable, oedema feet, liver 1 F.

*Investigation:* Stool–NAD; urine–NAD; Blood total 11500/Cmm., P-22%, L-70%, M-6%, E-2%, Hb. 9.5 gm%, Serum proteins-0.02 gm/100 cc. Albumin 2.1 gm/100 cc, Globulin–2.92 gm/100 cc, A/G 1:1.4. *Diagnosis:* Kwashiorkor.

*Treatment:* Liv.52, Antibiotics, haematinics, proteins.

*Therapeutic response:* Fair, Enlargement of liver with all features diminished in 20 days. Gain in weight 2 lb.

#### *Case No. 15*

*Saroj Kumari*, 2 years 1 month, admitted with diarrhoea 5 months, oedema of the feet 1 month, ulceration of mouth and tongue 25 days, low grade fever 2 months. Dietary history: Mother's milk 1½ years, cow's milk. Social status: poor class.

*On examination:* Irritable, anasarca, angular stomatitis. Swollen eyelids, weight 26 lb. Pulse 120/Mt. Lungs–few crepts, CVS–NAD, Liver–just palpable, soft.

*Investigation:* Stool routine – NAD. Urine – NAD. Blood Hb – 6%, Total WBC 22000/Cmm., P-79%, L-19%, M-2%, B-Nil. Serum Proteins – 3.72 gm./100 cc. Albumin – 1.24 gm./100 cc. Globulin – 2.48 gm./100 cc. A/G ratio 1/2.

*Diagnosis:* Kwashiorkor.

*Treatment:* Liv.52 antibiotics, proteins, haematinics.

*Therapeutic response:* Good. Improved appetite and digestion, as well as regression in liver enlargement. Gained 3½ lb.

#### *Case No. 16*

*Kapildeo*, Hindu, male, 2 years 8 months, admitted with the complaints of irregular diarrhoea 4 months, loss of weight 4 months, oedema feet and ankle 15 days. Dietary history: Mother's milk for 1 year 2 months with rice, vegetable; thereafter with cow's milk. Social status; poor class.

*On examination:* Wasted and pale, miserable, skin dry and rough, hairs thin coarse and dry, brownish black, liver 3F., spleen just palpable, CVS and chest – NAD.

*Investigation:* Stool – degenerated leucocytes – a few; urine – albumin, a trace. Blood Hb 58%, Total WBC - 16400/Cmm. P-35%, L-53%, M-8%, E 5%. Total RBC – 3.14 million/Cmm. Serum Proteins – 5.54 gm./100 cc. Albumin – 2.74 gm./100 cc. Globulin - 2.80. A/G 1:1.2.

*Diagnosis:* Kwashiorkor.

*Treatment:* Liv.52 Drops, Antibiotics, haematinics, proteins.

*Therapeutic response:* Good. Appetite and digestion markedly improved. Patient gained 4 lb.

#### *Case No. 17*

*Shakuntala*, 3½ years, was admitted with the complaints of loss of weight 3 months, ulceration over the body 1 month. Dietary history: Mother's milk for 5 months, cow's milk and solids thereafter. Comes from poor class family.

*On examination:* Markedly wasted, apathetic and very irritable, hyper pigmented patches over thigh and back; hairs – scanty. Lungs – a few crepts. CVS-NAD. Weight 22 lb., liver 2½ F.

*Investigation:* Stool – NAD, Urine – NAD, Blood: Hb – 8 gm/100 cc. Total WBC – 22480/Cmm., P-62%, L-34%, M-4%, E-9%, Total RBC – 3.02 million/Cmm., Total Serum Proteins – 4.50 gm./100 cc. A/G 1:3.12.

*Diagnosis:* Kwashiorkor.

*Treatment:* Liv.52 Drops, Antibiotics, Proteins, Haematinics for 26 days.

*Therapeutic response:* Good. Markedly the symptoms disappeared. Patient gained 3 lb.

#### *Case No. 18*

*Zaira*, Muslim, female, 2 years 2 months, admitted with complaints of diarrhoea 5 months, loss of weight 4 months, ulceration of mouth 2 months, oedema 15 days. Dietary history: Mother's milk for 1 year, rice and vegetables. Social status: poor class.

*On examination:* Irritable, wasting, skin dry and rough, scaly hyper-pigmented patches, hair–thin and coarse. Liver 2 F.

*Investigation:* Stool and urine – NAD. Blood Hb – 9.35 gm./100 cc. Total WBC – 10950/Cmm, P-44%, L-52%, M-2%, E-2%. Total RBC – 3.54 million/Cmm. Serum Protein Total 4.94 gm./100 cc. Albumin – 2.17 gm./100 cc. Globulin – 2.75 gm./100 cc. A/G 1: 1.26.

*Diagnosis:* Kwashiorkor.

*Treatment:* Liv.52, Antibiotics, proteins for 4 weeks.

*Therapeutic response:* Good. Marked improvement in appetite and digestion. Patient gained 4 lb. Symptoms rapidly disappeared.

#### *Case No. 19*

*Md. Zubaid*, Muslim, male 2 years, admitted with complaints of diarrhoea 4 months, loss of weight 3 months, irregular fever and cough 15 days. Dietary history: Mother's milk 4 months, after that barley, glucose water, cow's milk. Comes from poor class family.

*On examination*: Wasted, pale, miserable and irritable; skin – rough and hyper-pigmented patches. Liver enlarged 1½F, slightly firm, chest and CVS–NAD.

*Investigation*: Stool and urine – NAD. Blood Hb 6 gms/100 cc. Total WBC – 12350/Cmm, P-48%, L-50%, M-6%, E-2%. Serum Proteins – Total 5.21 gm./100 cc. Albumin – 2.72 gm./100 cc. Globulin – 2.72 gm./100 cc.

Diagnosis: Kwashiorkor.

*Treatment*: Liv.52, Antibiotics, proteins haematinics for 5 weeks.

*Therapeutic response*: Good. Remarkable general improvement. Patient put on 5 lb. in weight.

#### *Case No. 20*

*Sudamia*, Hindu, female, 1 years 8 months, admitted with the complaints of diarrhoea 6 months, irregular cough and fever, loss of weight, oedema of ankle and feet. Dietary history: Mother's milk, rice water, Social status: poor class.

*On examination*: Weight 18 lb., marked wasting, irritable, slight oedema of the feet, hyper-pigmented patches, excoriations, golden yellow hairs. Lungs – a few crepts and rhonchi. CVS – NAD. Liver – just palpable.

*Investigation*: Stool and urine – NAD, MT – negative, Blood Hb – 8 gm./100 cc. Total WBC 16000/Cmm, P-71%, L-26%, M-3%, Total RBC – 2.58 million. Serum Proteins 4.68 gm./100 cc. Albumin – 2.18 gm./100 cc. Globulin – 2.50 gm. A/G 1:1.5.

Diagnosis: Kwashiorkor.

*Treatment*: Liv.52, antibiotics, proteins and vitamins.

*Therapeutic response*: Fair, Patient gained 2 lb.