Research Article

Status of Milk Protein Versus Nonvegetarian Diet as Food Supplement in Management of Pulmonary Tuberculosis

Avinash Shankar[1,2]*, Amresh Shankar[3] and Anuradha Shankar[4]

[1]Postgraduate in Endocrinology and Metabolism, AIIMS, Delhi, India

[2]Chairman, National Institute of Health and Research, Warisaliganj, Nawada, Bihar, India

[3]State Health Services, Government of Bihar, Director (Hon), Aarogyam Punarjeevan, Patna, India

[4]Director, Centre for Indigenous Medicine and Research, RA Hospital and Research Centre, Warisaliganj, Nawada, Bihar, India

*Corresponding Author: Avinash Shankar, Postgraduate in Endocrinology and Metabolism, AIIMS, Delhi and Chairman, National Institute of Health and Research, Warisaliganj, Nawada, Bihar, India.

Abstract

India a largest TB burden country in the world and increasing incidence in spite of advancement in diagnostic procedure and modified therapeutic regime. In addition, post therapy quality of life becoming worse due to respiratory distress caused by lung fibrosis resulting in reduced pulmonary bed even in sputum negative cases.

Though health authority these days practicing Direct observed short term schedule (DOTS) but cross resistance and emergence of mutagenic strain of Mycobacterium tuberculosis.

For high protein supplement usually non vegetarian food supplement remain a choice but the present study reveals the superiority of milk protein supplement as compared to animal flesh in achieving cure with retained and improved lung vitality and viability and improved pulmonary function due to natural repair of damaged lung parenchyma due to absence of nun nutrient toxic constituents in milk whereas all animal flesh constitute toxic non nutrients which delays cure, impair immunity, healing by fibrosis with compromised pulmonary function and worst quality of life.

Keywords: TB Burden; Respiratory Distress; Milk Protein, Non-Vegetarian Supplement; Pulmonary Function; DOTS; Viability and Vitality; Non-Nutrient

Introduction

India is the largest TB burden country having an estimated incidence of 2.2 million cases every year against global incidence of 9.6 million every year, approximately, death of approximately 2.2 million every year, and also cost Indian economy of 340 million US$ every year. In addition, emergence of Total drug resistance Tuberculosis and post therapy respiratory discomfort making the issue more worse [1-4].

Average prevalence of all forms of TB in India is estimated to be 5.05/thousands, prevalence of smear positive cases 2.27/thousand and average annual incidence of smear positive cases is 84/lakh annually and even today in India 2 persons dies of Tuberculosis every 3 minutes.

The most commonly used anti TB drugs includes RIEP (Rifampicin, Isoniazid, Ethambutol and Pyrazinamide) which though ensure bacterial negativity but usually present with declined pulmonary bed presenting with respiratory distress [5-7].

The Indian Government Revised National Tuberculosis Control Program (RNTCP) recommends WHO recommended regime DOTS (Directly observed Treatment Short Course) to achieve and maintain TB treatment success rate of at least 85% [8-10].

In spite of newer modality for diagnosis and treatment of TB, millions of people still suffer and die due to TB and its sequel. severity and outcome of TB infection depends on immune system of healthy person and TB infection in healthy people remain asymptomatic as TB bacilli lives and multiply in microphases [11,12].

Figure 1and 2.

An impression that TB is a disease of poor but now no one remain spared due to increasing dietary non-nutrient compromising body self-defence.

Consumption of non-pasteurised milk or raw milk was considered a predisposition for bovine TB; thus milk and milk product been kept away from high protein dietary supplement and non-vegetarian food being promoted.

Increasing incidence of post therapy respiratory distress and poor weight gain, makes the patient more prone for recurrent TB infection, delayed healing yielding marked lung fibrosis resulting in restricted pulmonary function.

Thus, fight against TB will remain incomplete till the treatment of Pulmonary TB failures to ensure lung's viability and vitality in addition to bacterial cure.

In spite of various available prognostic measure weight gain still remain an index of choice to assess the therapeutic outcome. In addition, nutrition supplement plays vital role in natural healing of lungs parenchyma and disease recurrence.

Increasing non-nutrient factors in choice high protein supplement, in spite of being costly and present facility of pasteurized milk availability, our clinical study focused to assess the quality of life of patients of pulmonary tuberculosis with vegetarian diet and milk protein.

Objectives of Study

To assess the significance of milk protein supplement over non-vegetarian animal flesh in therapeutic outcome and quality of life in Pulmonary tuberculosis.

Material and Methods
Design of Study

Comparative clinical evaluation of therapeutic out come and quality of life of pulmonary tuberculosis patients with high protein resources from milk and non-veg products.

Material

400 patients attending RA. Hospital and Research Centre, Warisaliganj (Nawada) during January 2013 to December 2016 been selected for assessment of the high protein supplement (Milk and its derivatives) versus non-vegetarian food in modifying therapeutic outcome and quality of life in patients of pulmonary tuberculosis.

Method

Selected patients were interrogated, clinically examined, pathologically, immunologically and radiologically assessed to establish the clinical diagnosis of pulmonary tuberculosis.

To assess the post therapeutic status each patient's body weight, hepatic, renal, radiological, pulmonary function (Spirometry) been evaluated before and after therapy.

Selected patients were classified in to two groups comprising equal number of patients of similar status and in addition to their therapeutic regime each group patients were advocated:

- Group A: Pasteurized or parboiled milk, and its derivatives (1 Kg milk) daily
- Group B: Non-vegetarian protein supplements (Meat, Chicken, Fish Or others)
- Anti TB regime: As per Clinical status

Patients were assessed as per following index of assessment:

- Symptomatic relief
- Gain in body weight
- Status of appetite
- General condition
- Respiratory function
- Treatment withdrawal
- Toxicity: Jaundice, Oliguria, Disease dissemination

Based on clinical response therapeutic outcome been graded as:

Outcome grades	Characteristics
I	Complete symptomatic and pathological Relief, gain in body weight,
II	No respiratory distress, No adversity Symptomatic relief, Pathological cure No adversity
III	Symptomatic relief, No weight gain

Table

## Observations

Selected patients were of age group 20-40 years with male female composition of 240:160 and 276 were freshly detected new TB cases while rest 124 were old treated TB cases with post therapy agony (Table 1).

Age group (In Year)	Number of patients		
	Male	Female	Total
20 - 25	48	25	73
25 -30	778	38	116
30 - 35	67	48	115
35 -40	47	49	96

Table 1: Age and sex wise distribution of patients.

Pie Diagram 1
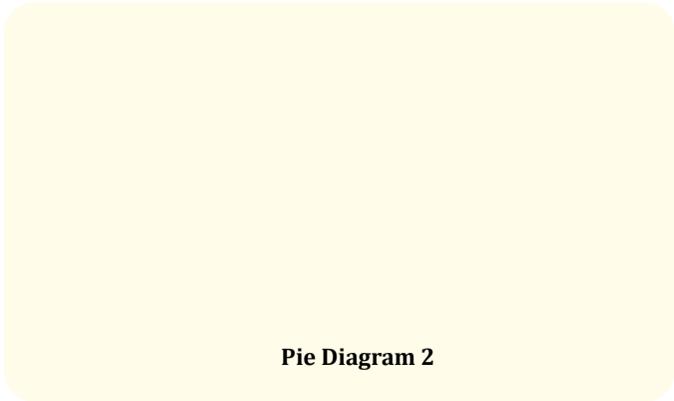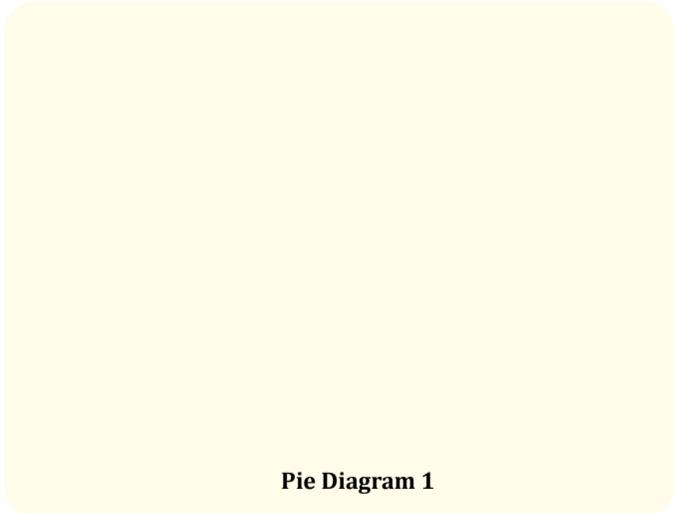
Pie Diagram 2

Pie diagram showing composition of patients as per disease status.

New cases – 276; Old treated cases – 124.
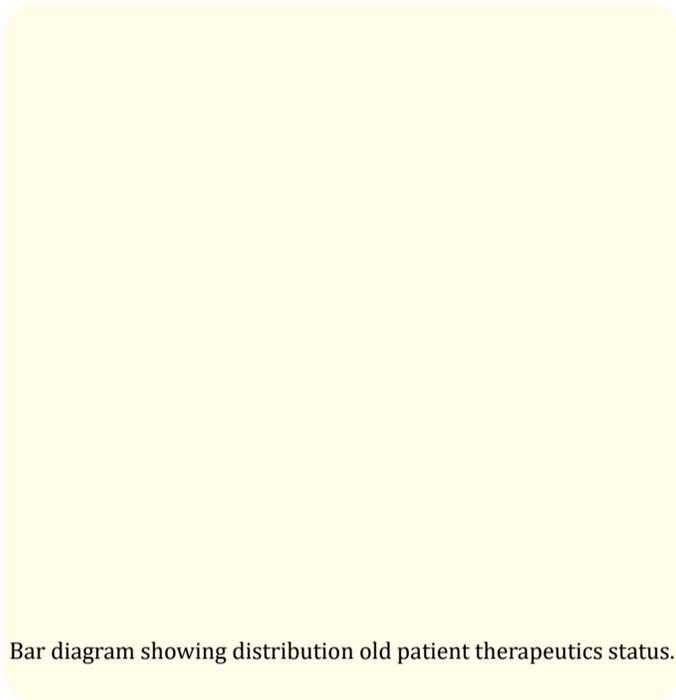
Bar diagram showing distribution old patient therapeutics status.

Among all 59% were with body weight less 1SD (5 kg) IBW (ideal body weight) while 6.5% were with IBW (Table 2). Majority patients were presenting with evening rise of temperature, pain in chest, cough with copious expectoration, loss of appetite and progressive loss of body weight while old treated cases were presenting with symptoms like strenuous breathing, respiratory distress and haemoptysis (Table 3).

Clinical presentation	Number of patients
Evening rise of temperature	390
Hemoptysis	366
Breathlessness	126
Progressive weight loss	400
Persistant cough	400
Pain in chest	400
General debility	400

Table 2: Distribution of patients as per their clinical presentation.

Body weight	Number of patients
IBW -1SD	236
IBW-2SD	109
IBW-3SD	39
IBW	26

Table 3: Distribution of patients as per their body weight.

Out of all 292 cases show AFB positive but all shows positive for immunological test for Tuberculosis (Table 4).

Among selected cases 74 were with marked respiratory distress while 220 were mild and 56 had no respiratory discomfort, haemoglobin < 10 gm % in 292 and altered hepatic function in 12 cases in pre-therapy state (Table 5), Sputum conversion was faster in group A than group B (Graph showing comparative status).

Pathological parameters	Number of patients
Sputum for Acid Fast Bacillin	
Positive	292
Negative	108
Immunological (IgM & IgG)	400

Table 4: Distribution of patients as per their pathological state.

Bio particulars	Number of patients
Haematological status;	
Hemoglobin:	
< 10gm	292
10gm	108
Hepatic profile:	388
Serum bilirubin:	012
<1mg%	
>1mg%	
SGOT:	
<30 IU	388
>30 IU	012
SGPT	
<30 IU	388
>30 IU	012
Renal profile:	
Blood urea:	
< 26mg	400
> 26mg	none
Serum Creatinine	
<1.5mg	400
>1.5mg	none
Urine:	
Albumin Positive	03
Absent	397
Radiological status	
Without any fibrosis	276
Fibrosis:	
Extensive	74
Minimal	50
Spirometry:	
Respiratory distress:	
Marked restriction	74
Moderate restriction	50
Mild restriction	220
Normal	56

Table 5: Distribution of patients as per their pre-therapy bio status.

All cases of group A shows marked improvement in clinical presentation, weight gain without any respiratory discomfort or adversity with grade I clinic pathological outcome while other group patients taking non-vegetarian food shows delayed sputum conversion, with initial weight gain, respiratory distress in 70% cases, altered pulmonary function test (Spirometry) and hepatic dysfunction in 12% cases, none has grade I clinical response but had grade II and grade III outcome (Table 6).

Graph showing sputum conversion time required in each study group.

Results

Milk and milk product supplement prove worth as compared to non-vegetarian diet supplement in TB management to ensure scar less pulmonary bio healing with earlier sputum conversion and body weight gain without any adversity

Discussion

Increasing incidence and death in pulmonary tuberculosis and worst quality of life even after treatment and sputum conversion, is supposed to be due to recurrence of the disease, drug misuse, low nutritional support either due to poverty or increasing non-nutrient dietary constituents, hormone constituents of non-vegetarian animal flesh, results in low immunity, reduced drug utilisation, delayed healing, decreased pulmonary bed due to fibrosis [14,15].

Figure 3 and 4

Bio particulars	Number of patients	
	Group A	Group B
Symptomatic relief in all		
Fresh cases	10 days	1 month
Old cases	21 days	49 days
Appetite improvement		
In 1 month	all	49
Weight gain in 1 month	all	45
Weight gain on completion:		
IBW + 1SD	all	none
IBW	-	62
Respiratory status		
Strenous	none	106
Moderate distress	none	56
Mild distress	-	16
Spirometry:		
Altered pulmonary function	none	170
Radiological appearance		
Healing with fibrosis:		
Marked	none	106
Moderate	-	56
Mild	-	16
Grade of response:		
Gr I	200	-
Gr II	-	96
Gr III	-	104
Hepatic function:		
Fatty liver	none	22
Raised SGOT	none	26
Raised SGPT	none	30
Renal profile:		
Urine Albumin (+)	none	06
Raised blood urea	none	05
Raised Serum Creatinin	none	05
Hematological:		
Hemoglobin <10gm	none	38

Table 6: Showing outcome of therapy.

Though usually non-vegetarian protein supplement is encouraged with Anti Tuberculosis therapy, considering milk supplementation as risky considering propagation of bovine tuberculosis [16].

The present study reveals clinicopathological supremacy of milk supplementation with better quality of life, early sputum conversion, weight gain, maintained lung vitality and viability without any respiratory encumbrance in both fresh and old cases achieving grade I therapeutic outcome in all the cases where as other group non-achieved grade I clinical response, which is considered as: Milk protein from pasteurized or parboiled milk question of bovine tuberculosis remain completely checked, in addition highly digestible, improve immunity, promote anabolism, utmost drug utility, early sputum conversion, natural healing of damaged lung parenchyma with normal pulmonary function evident by radiology and spirometry, contrary to non-vegetarian food supplement contain various non nutrient dietary factors, noxious substances and hormones which not only compromise drug utilisation, and delays healing but compromised immunity results in recurrent infection and today nation face an emergence of Total drug resistance Tuberculosis (Figure 6).
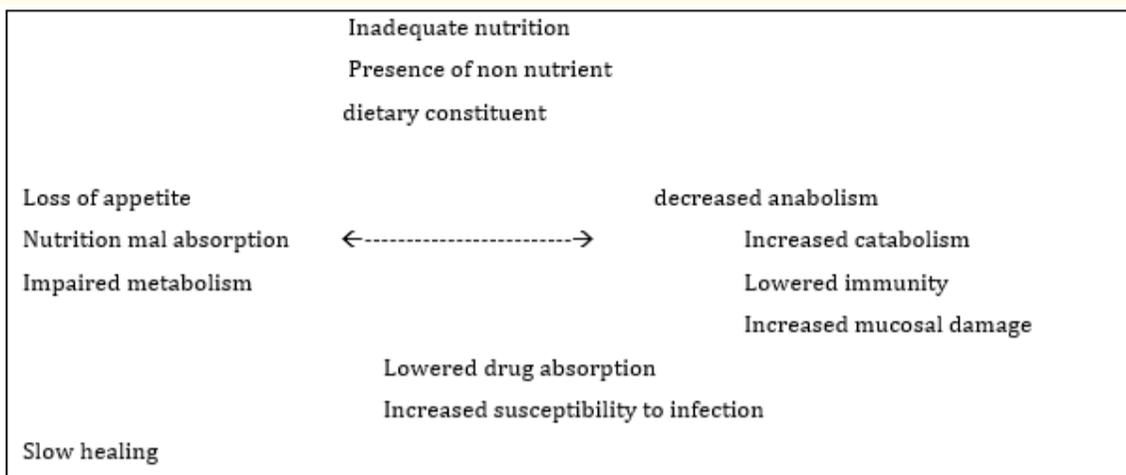
Inadequate nutrition
Presence of non nutrient
dietary constituent

Loss of appetite   decreased anabolism
Nutrition mal absorption ←---------------------→   Increased catabolism
Impaired metabolism   Lowered immunity
                                          Increased mucosal damage

Lowered drug absorption
Increased susceptibility to infection

Slow healing

Figure 5

Figure 6

Conclusion

Milk protein supplementation with anti-tuberculosis drugs proves worth than non-vegetarian diet supplement in ensuring quality of life with excellent (Grade I) outcome and improved pulmonary function.

Bibliography

1.   News-medical.net [Internet]. History of Tuberculosis (2010).

2.   Prasad H., *et al*. "Bovine tuberculosis in India: Potential basis for zoonosis". *Tuberculosis* 85.5-6 (2005): 421-428.

3. Geneva: WHO; World Health Organization. Fact Sheet No.104: Tuberculosis (2010).

4. Geneva: WHO; World Health Organization. THE GLOBAL PLAN TO STOP TB 2006-2015: PART I Strategic directions (2006).

5. Proceedings of the Tuberculosis Association of India. New Delhi, India: Tuberculosis Association of India (1939).

6. Agarwal SP., *et al*. "Tuberculosis Control in India. New Delhi, India: Directorate General of Health Services, Ministry of Health and Family Welfare". The history of Tuberculosis Control in India: Glimpses through decades (2005): 15-22.

7. Indian Council of Medical Research. Tuberculosis in India: A national sample survey 1955-1958. Technical report series. New Delhi, India: Indian Council of Medical Research; (1959).

8. Sikand BK and Pamra SP. Domicilliary treatment-results of antibiotic therapy.Proceedings of the 13th TB Workers Conference; Trivandrum, India. India: TB Association of Trivandrum (1956): 179-213.

9. Ntiindia.kar.nic.in [Internet] India: National Tuberculosis Institute, Bangalore, India (2010).

10. World Health Organization. Tuberculosis programme review-India. Geneva: WHO (1992).

11. World Health Organization. Joint TB Programme Review-India: WHO, SEARO-TB-224. Geneva: WHO (2000).

12. Khatri GR and Frieden TR. "The status and prospects of tuberculosis control in India." International *Journal of Tuberculosis and Lung Disease* 4.3 (2000): 193-196.

13. Crofton J., *et al*. "Guidelines for the management of drugresistant Tuberculosis". Geneva: WHO (1997): 31-37.

14. Crofton J. "Chemotherapy of pulmonary tuberculosis". *British Medical Journal* 1.5138 (1959):1610-1614.

15. World Health Organization. The WHO/IUATLD Global Project on Antituberculosis Drug Resistance Surveillance. Anti-tuberculosis drug resistance in the world. Report No. 2. Geneva: WHO; (2000).

16. Paramasivan CN. "Surveillance of Drug resistance in India". In: Agarwal SP, Chauhan LS, editors. Tuberculosis Control in India. India, New Delhi: Directorate General of Health Services.

Volume 2 Issue 7 July 2018