



LACTOSE MALABSORPTION STUDY IN RELATION TO AGE

R. Jaya Prakash Reddy¹, P.Vijaya Narasimha Reddy² and Palani Kesavamurti³

¹Department of General Medicine, Rajiv Gandhi Institute of Medical Sciences, Ongole, Prakasam Dist.Pin:523001.Andhra Pradesh.

²Department of General Medicine, Rajiv Gandhi Institute of Medical Sciences, Kadapa, YSR Dist. Pin: 516001. Andhra Pradesh.

³CASS, Dept of Pediatrics, Govt Head Quarters Hospital, Krishnagiri, Tamilnadu.

Email:rjpr2009@gmail.com Contact No:-9490064648

ABSTRACT

Background: Lactose malabsorption is of serious gravity and since malnutrition prevails in magnimous proportions in our community, it was deemed worthwhile to conduct a study of Lactose malabsorption in malnutrition. Main objective is to study the relationship of lactose malabsorption to age.

Methods: 134 children ranged between ages of 6 months to 3 years, of both sex and varying grades of malnutrition, were studied. This study was conducted at Rajiv Gandhi Institute of Medical Sciences (RIMS), Ongole, Prakasam Dist, Andhra Pradesh. The study was carried out for a period of 1 year with informed consent. Study conducted between JULY 2012 – JULY 2013.All children were grouped into 4 grades of malnutrition according to Indian Academy of Pediatrics recommendation. We included 134 patients who are admitted in our wards and followed up the patients post discharge. Stool pH was determined by Nitrazine paper range 5 to 7.5.Lactose tolerance test was done in all the cases by loading 2 Gm. per Kg. body weight, which is supplied by the National Institute of Nutrition, Hyderabad, in the form of 10 percent lactose solution after 4 hours fast.

Results: Maximum number of cases studied were between age group 1 to 2 years i.e. 50.75 percent when first seen and 50 percent when followed. .Out of 90 cases, 46 of Lactose malabsorbers were between 1 to 2 years of age. Stool pH range was between 5 to 6 in 86 cases and between 6 to 7 in 4 cases in the total 90 lactose malabsorbers.

Conclusion: Lactose malabsorption is common in protein –energy malnutrition. This can be determined by simple ward tests and abnormal lactose tolerance curve after oral lactose load. Malnutrition leads to lactose malabsorption and lactose malabsorption is an important contributory factor in production of malnutrition.

Key words: Lactose malabsorption, Age, Malnutrition.

INTRODUCTION

Lactose malabsorption is of serious gravity and since malnutrition prevails in magnimous proportions in our community, it was deemed worthwhile to conduct a study of Lactose malabsorption in malnutrition.

McLaren stated that at any given time something of the order of 400 million of pre-school children suffers from severe degree or the other forms of malnutrition and therefore, constitutes one of the real serious health hazards. [1]

John Howland an eminent pediatrician pointed out, in the early part of this century, the relation of carbohydrates with initiation and perpetuation of diarrhea, it took many years to arrive at this realization and almost all other ingredients of milk were held responsible before sugar. [2]

Jacobi postulated the association of lactose and other carbohydrates with the pathogenesis of diarrhea. [3]

METHODS

We included all patients who are admitted in pediatric wards and followed up post discharge. 134 children ranged between ages of 6 months to 3 years, of both sex and varying grades of malnutrition, were studied. This study was conducted at Rajiv Gandhi Institute of Medical Sciences (RIMS), Ongole, Prakasam Dist, Andhra Pradesh. The study was carried out for a period of 1 year with informed consent. Study conducted between JULY 2012 – JULY 2013. All children were grouped into 4 grades of malnutrition according to Indian Academy of Pediatrics recommendation, (Ghai, 2011). In all the children height/ length and mid- arm circumference were taken. A detailed history of present illness, relevant past history, an accurate dietetic history, thorough general and systemic examination, stool examination, hemoglobin, serum protein, B.C.G. test and x- ray chest were done. In all cases family size, social class and per capita income were taken into consideration.

Stool pH was determined by Nitrazine paper range 5 to 7.5.

Lactose tolerance test was done in all the cases by loading 2 Gm. per Kg. body weight, which is supplied by the National Institute of Nutrition, Hyderabad, in the form of 10 percent lactose solution after 4 hours fast. Blood glucose estimation was done at 0, 30, 60 minutes after oral lactose load. All these patients were observed for a period of 8 hours for any side – effects of lactose oral load and stool samples before and after the lactose oral load were collected for pH determination. Blood glucose estimation was done by Eyetone reflectance calorimeter. After lactose tolerance test and barium meal examination parents were instructed to exclude milk from the diet of the child.

The study was carried out for a period of 1 Year and permission from Institutional Ethics Committee was obtained. From each and every patient included in the study, initially informed individual consent was taken.

RESULTS

Table No 1 shows distribution According to Age in the study group. First Seen and Follow- Up cases. Maximum number of cases studied were between age group 1 to 2 years i.e. 50.75 percent when first seen and 50 percent when followed.

Table 1: Distribution according to Age.

Grades of Malnutrition	First Visit			Follow Up		
	0-1Years	1-2 Years	2-3 Years	0-1 Years	1-2Years	2-3 Years
I	6	14	4	6	12	4
II	6	12	14	6	8	10
III	10	32	10	10	20	4
IV	6	10	10	4	10	4
Total	28	68	38	26	50	24

Table No 2 shows Age distribution of Lactose malabsorption. Out of 90 cases, 46 of Lactose malabsorber were between 1 to 2 years of age.

Table 2: Age Distribution of Lactose Malabsorbers.

Grades of Malnutrition	0- 1 Years	1-2 Years	2-3 Years
I	0	0	0
II	2	8	6
III	10	28	10
IV	6	10	10
Total	18	46	26

Stool pH range was between 5 to 6 in 86 cases and between 6 to 7 in 4 cases in the total 90 lactose malabsorbers.

Table 3: STOOL pH Range in Lactose Malabsorbers.

STOOL pH Range	Number of Cases	%
5 – 6	86	95.55
6 – 7	4	4.45

DISCUSSION

The earliest literature on lactose as constituent of milk was known 345 years ago. [4] The concentration of lactose in milk varies from species to species. The milk of Californian sea lion contains no lactose that of rabbits contains only 2 Gms. [5] In the present study the incidence of lactose malabsorption is 67.1 percent i.e. 90 malabsorbers out of 134 cases studied and this observation is in accordance with Desai (1967). [6]

Dabke (1979), who showed 18.7 percent incidence, because of age difference and children who were not malnourished were also included in his study. [7][8]

CONCLUSION

In this study children of varying grades of malnutrition between 6 months to 3 years of age were included for the evidence of lactose malabsorption by detecting stool pH and lactose tolerance test by estimating blood glucose levels after oral lactose load and then by doing a barium meal radiograph for the evidence of malabsorption syndrome. Lactose malabsorption is common in protein –energy malnutrition. This can be determined by simple ward tests and abnormal lactose tolerance curve after oral lactose load.

Lactose malabsorption increases with the severity of malnutrition.[9]

In majority of the patients stool pH was between 5 to 6.

Lactose tolerance test was done by giving 10 percent solution of 2 Gms. per Kg. of body weight of oral lactose. Any cases whose pH was less than 6, is screened for lactose malabsorption.

There is no correlation of radiological evidence of malabsorption syndrome between lactose malabsorbers and absorbers.

Malnutrition leads to lactose malabsorption and lactose malabsorption is an important contributory factor in production of malnutrition. [10]

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