ORIGINAL ARTICLE
pISSN 0976 3325 | eISSN 2229 6816
Open Access Article
www.njcmindia.org

Effect on weight after Albendazole therapy among the primary school children in a slum of Kolkata

Madhumita Bhattacharyya[1], Rabindra Nath Sinha[2], Asim Sarkar[3], Ashok Kumar Mallick[4], Asit Kumar Panda[5]

Financial Support: None declared
Conflict of Interest: None declared

How to cite this article:
Bhattacharyya M, Sinha RN, Sarkar A, Mallick AK, Panda AK. Effect on Weight after Albendazole Therapy among the Primary School Children in a Slum of Kolkata. Natl J Comunity-Medicine 2018; 9(2):106-109

Author's Affiliation:
[1]Associate Professor; [2]Professor; [3]Assistant Professor; [4]Professor & Head, Dept of Maternal and Child Health (MCH); [5]Demonstrator, Dept of Statistics, All India Institute of Hygiene & Public Health, (AIIH&PH), Kolkata

Correspondence
Dr. Madhumita Bhattacharyya
drmadhumita4419@gmail.com

Date of Submission: 05-07-17
Date of Acceptance: 14-02-18
Date of Publication: 28-02-18

ABSTRACT

Background: One of the major public health problems in tropical countries including India is soil transmitted helminthiasis (STH) which not only causes morbidity of children but also affects the growth and nutritional status of children. World Health Organisation recommended Albendazole as safe and cost effective medicine for STH.

Objective: This study was conducted to assess the effect of Albendazole on the weight gain and worm related morbidity among the children of schools situated in an urban slum area of Kolkata.

Methods: This was a double- blind, placebo controlled school based interventional study. Six twenty six school children of 6 to 10 years old were randomly selected to receive either Albendazole or placebo. One group received two doses of Albendazole (400mg) 3months apart and another group received placebo.

Results: Mean weight gain of children was significantly higher in study group (Albendazole group) than the control groups after 6 months .The study group also experienced less episode of diarrhoea ,worm expulsion and gastrointestinal problems than control group. There was no adverse effect reported.

Conclusion: Periodic deworming is effective and safe for school children and it has also effect on weight gain and reduction of morbidity among the school children.

Key words: Albendazole, Weight gain, slum School children, Placebo

INTRODUCTION

The parasitic infections which are found as soil transmitted helminthic infection (STH) occurs through contaminated eggs of human faeces. These infections are common in the areas where sanitation is poor. Worldwide 1.5 billion(approximately) people are affected with STH.As a result the physical, mental and cognitive function of the children are impaired [1].More than two seventy million preschool age children and 600 million school aged children live in those areas where STH infection burden is high. Many tropical and subtropical countries are affected and the prevalence rate of infection is high in Sub –Saharan Africa, the Americas, China and East Asia[2].All people who are at risk and who are living in endemic areas, should receive periodic anthelminthic treatment without previous individual diagnosis as per current recommendation of WHO and elimination of morbidity due to STH in children by 2020 is the present global target.

The school children mostly suffer from various intestinal parasite infections especially the helminthic infection like Ascaris, Ankylostoma, Trichuris and enterobiasis and it is also the cause of gastrointestinal as well as other morbidities among them in

developing countries. The drug Albendazole is not only effective and well tolerated anthelminthic medicine but it can be used safely and effectively as a single dose treatment for common helminthic infections. Albendazole is also recommended for mass therapy in schools and in the community.[3-8]Studies from Africa revealed that deworming had good impact on the growth of the preschool and school children[9-11].Few studies in India also found good impact of Albendazole therapy on growth status of preschool children[12-15].

Most of the studies in this respect had been conducted among the preschool children .Very few studies were conducted on school children. We wanted to study the effect of Albendazole therapy on the weight of the school children of a slum area of Kolkata and also on morbidity pattern like diarrhoea ,History of worm expulsion ,Other gastro-intestinal problems(abdominal pain ,vomiting, acidity) of the school children after Albendazole therapy.

METHODS

This was a double- blind, placebo controlled, school based interventional study. Study area was the primary schools under Kolkata Municipal Corporation (KMC) in Slum area of Chetla, South Kolkata which is the field practice area of All India institute of hygiene & Public Health Kolkata (AIIH&PH). The Study was conducted June to November of 2014 after obtaining permission from ethical committee of AIIH&PH. Out of ten KMC Primary schools in that area, three were randomly selected and all the students of class I-V were registered for study. A total of 650 children were thus selected who were randomly allocated to study group and control group to receive one packet for each student containing either Albendazole Tablet (400 mg.) or a Placebo tablet (white coloured Vitamin B Complex). Randomization of students in two groups was done class wise and number of students in study group and control group were 325 in each group. Two nursing staffs of Urban Health Centre registered the children and distributed the medicine; they were unaware about the medicines inside the packet 'C' and 'D'. Based on attendance register in each class and with the help of the random table two groups were selected. Both the groups received two doses of Albendazole (400mg) or placebo (vitamin B complex) 3months apart. Consent of the parents was taken before registration of each child. Weight of each child was measured with standard weighing machine before intervention, at 3 months and again at 6thmonths. History of diarrhoea, worm expulsion and gastro-intestinal symptoms were noted in both the groups at 3 months and at 6 months. Obtained information was recorded in a predesigned, pre-tested proforma. Five children from Albendazole group and 19 children from placebo group could not be traced at the end of the study. So data of 626 study subjects (320 in Albendazole group and 306 in placebo group) were checked for consistency and completeness and then entered into excel sheet. Data was analysed by SPSS (version 21).The weight gain of study group was compared with the placebo group by student t test.

RESULT

In the study group among the 320 children 185(57.8%) gained weight after intervention at 6 months, 103(32.18%) not gained weight and 32(10%) lost weight, whereas 115(37.58%) gained weight, 151 (49.34%) not gained weight and 40(13.07%) lost weight in placebo/ control group (total 306). There was no significant difference in the mean weight in study group and placebo group ((table 1) before intervention (at 0 months) by independent t -test.

Table-1: Distribution of mean body weight of study and control group before and after intervention

Time	Weight: Study Gr(Kg) (n=320) (mean ± SD)	Weight: Control Gr(Kg) (n=306) (mean ± SD)
0 months	23.74 ± 4.92	24.16 ± 3.98
3 months	23.89 ± 4.81	24.15 ± 3.97
6 months	27.04 ± 4.93	24.14 ± 3.95

t-test for equality of Means (weight at 0 months) p- value=0.24; 95%CI=-1.12-0.28

Table 2: Weight gain after 6 months in study group and in control group

	Weight gain# (6 months to baseline)	CI	P value
Study Gr	3.30 ± 1.14	2.91 to 3.15	<0.00001
Control Gr	-0.02 ± 0.40	-0.061 to 0.028	0.473

*t test was used; #Mean ± SD in kg

Table –3: Morbidity following Albendazole therapy in Study and in Placebo group (p=0.11)

Disease	Study Gr	Control Gr	Total
Diarrhoea	31(36.04)	55(63.95)	86
Hook worm Expulsion	27(25)	81(75)	108
G. I. Symptoms	59(36.41)	103(63.58)	162
Total	117(32.86)	239(67.13)	356

Figure in parenthesis indicate percentage

Mean weight gain from 0 to 6 months (P=0.000)at 5% level was significant in study group but no significant difference found in the mean weight from 0 to 6months in placebo group(P=0.775).There was significant difference in the mean weight gain in the study group and control group(P=0.020).Mean

weight gain in study group was 3.30kg and in placebo group -0.02kg(rather weight loss) which was significant where P=0.000 and P=0.473 respectively (table 2) by paired T test.

In the study group total 117(32.8 6%) suffered from diarrhoea, worm expulsion and GI symptoms whereas 239(67.13%) suffered from same in placebo group .This difference was not significant (P=0.11) (Table-3)

DISCUSSION

Our study on school children showed that weight gain in Albebendazole group was significantly higher when compared with placebo group at the end of intervention period (Table 2). Studies from India and Africa also recorded weight gain after Albendazole therapy in preschool children and school children .In a study in Uganda by Alderman H et al showed that 10%(166g/child /year)above expected weight gain [9]. Awasthi S et al recorded that risk of stunting was less in Albendazole group than placebo group [12]. Sur D et al studied on 2-5 years children and found mean weight increased significantly in Albendazole group than placebo group [14]. All the above studies mentioned was carried out among the preschool children. Study by L.S Stephenson et al on Kenyan school children found that 0.9-1.1kg weight increase after two doses of Albendazole therapy [10].But no significant weight gain found in placebo group. They also found significant increase in height of study group than in placebo group.

Present study also revealed reduced incidence of diarrhoea ,history of worm expulsion and gastrointestinal problems like abdominal pain, hyperacidity, vomiting in study group than placebo group (Table III) though it was statistically not significant but study by Sur D et al showed significant reduction of diarrhoeal episode among the study group than the placebo group [14].

Most of the study preferred 6monthly dose of Albendazole, but in this study Albendazole therapy was given 2doses in 3months interval. No side effect of Albendazole was detected. It was safe effective and it also helps in weight gain of children. This study shows the periodic Albendazole administration helps the normal growth of the children as intestinal worm infections may hamper the absorption of macro and micronutrients which are required for normal growth of the children.

CONCLUSION

Present study showed that periodic Albendazole therapy had a positive effect on growth of the school children in a slum area of Kolkata with evidence of increase in weight gain than placebo group. The weight gain is significant when compared with placebo group.The national program of anthelminthic distribution to school children should be strengthened to get this positive effect on growth of the children.

Limitations

More studies are required in different settings with prolong follow up to establish the fact. There is also scope to improve the nutritional status by examining other parameters of growth like height for age,BMI etc.

REFERENCES:

1. WHO. Soil transmitted helminthic infection update May 2015, http/www who.int/mediacentre/factsheets/ fs366/en/ available on 01/06/2015.
2. Pullan RL, Smith JL, Jasararia R, Brooker SJ .Global numbers of infection and disease burden of soil transmitted helminth infections in 2010.Parasites and Vectors.2014 7:37.www.parasitesandvectors.com/content/7/1/37 availed on 02/6/15
3. Prasad R, Mathur P P, Taneja V K, Jagota Sc. Albendazole in the treatment of intestinal helminthiasis in the children .Cllin Ther 1985(2):164-8.
4. Adams V J, Lombard CJ, Dhansay Ma, Markus MB, Finchman JE. Efficacy of Albendazole against the whipworm, trichuris trichura -a randomised controlled trial. S.Afr Med J .2004; 94(12)972-6
5. Ahmad A, Zohra A, Yasmin N. Albendazole in intestinal helminthiasis. Journal of Pakistan Medical Association.1986; 65(5):114-117.
6. Oyewole F, Ariyo F, Oyibo WA, Sanyaolu A, Faweya T, Monye P et al. Helminthic reduction with Albendazole among school children in riverine communities of Nigeria. Journal of Rural and Tropical Public Health.2007; 6:6-10.
7. Wiria AE, Hamid F, Wammes L J, Kaisar M M , May L, Margaretta et al the effect of three monthly Albendazole treatment on malarial parasitaemia and Allergy-A household based cluster randomised double blind placebo control trial .PLoS ONE.2013.wwwncbi.nim.nih.gov/pubmed/23526959,availed on3/6/15.
8. Kirwan P, Asaolu S O, Molloy SF, Abiona TC, Jackson A L, Holland C V. Patterns of soil transmitted helminth infection and impact of four monthly Albendazole treatment in preschool children from semi urban communities in Nigeria-a double blind placebo controlled randomized trial. BMC infect Dis2009; 9:20.
9. Alderman H, Konde-Lule J,Sebuliba I,Bundy D,Hall A.Effect on weight gain of routinely giving Albendazole to preschool child health days in Uganda .Cluster randomized controlled trial .BMJ 2006 15th July;(333)122-124
10. Stephenson L S, Latham Mc, Adams EJ, Kinoti SN, Pertet A. Weight gain of Kenyan school children infected with Hookworm, Trichuris Trichura and Ascris Lumbricoids is improved following once or twice yearly treatment. J.Nutr 1993; 123(4):656-65.

11. Fox M L, Furness B W, Haser J K, Desire D, Briassau J M, Milord M D. Tolerance and efficacy of combined Diethyl carbamazepine and Albendazole for treatment of Wucheria Bancrofti and intestinal helminthic infections in Haitian. Am J Trop Med Hyg.2005; 73(1)115-121.

12. Awasthi S, Pande VK, Fletcher R H ,Effectiveness and cost effectiveness of Albendazole in improving status of pre-school children in urban slums. Indian Paediatrics, 2000;37 :19-29.

13. Awasthi S, Peto R, Read S. Richards SM, Pande V, Bundy D;DEVTA team. Population deworming every six months with Albendazole in 1million preschool children in North India. Lancet 2013; 381(9876):1478-86.

14. Sur D, Saha D R, Manna B ,Rajendran K, Bhattacharya S K. Periodic deworming with Albendazole and its impact on growth status and diarrhoeal incidence among children in an urban slum of India. Trans R Soc Trop Med Hyg 2005; 99(4):261-7.

15. Kallaiappan SP, George S, Kang G, Prevalence and clustering of soil transmitted helminth infections in a tribal area in Southern India. Trop Med Int health 2013; 18(12)1452-62.