ELSEVIER

Nutrition Research 22 (2002) 85–87

NUTRITION RESEARCH

www.elsevier.com/locate/nutres

Influence of vitamins and trace-elements on the incidence of respiratory infection in the elderly

Amrit L. Jain*

From the Medical Clinic and Nursing Home, Jaipur, India

Received 15 October 2001; accepted 16 October 2001

Abstract

The influence of a supplement containing all essential vitamins and trace-elements previously demonstrated to enhance immunity and reduce infection was tested on 18 elderly individuals and 18 age-sex matched controls in the age range 51–78 years. The treated group suffered from respiratory infections for fewer days (14 ± 2) compared with placebo controls (29 ± 4) ($p < 0.03$). The number of days of antibiotic usage was also less in those receiving the supplement (27 ± 4 days, versus 58 ± 5 days in controls, $p < 0.02$). It is recommended that all older persons above 50 years of age should be given such a supplement on a regular basis.

Keywords: Nutritional supplement; Elderly; Respiratory infection; Bronchitis; Pneumonia; Sinusitis

1. Introduction

The number of elderly individuals is increasingly progressively in all parts of the world. This is also true of developing countries, including India. Just one percent increase in the elderly, whatever age definition one might choose, translates into 10 million additional "senior" citizens in India; thus, old age is a major social problem. It is also a significant health problem because older persons have a higher incidence of infection [1]. Moreover, when they fall ill, the disease lasts a much longer course than it does in younger people. Even mortality from infectious disease, such as pneumonia, is higher in the elderly [1]. Since nutrition is important for maintaining good immunity [2–4], we have conducted a clinical

* 16-1375 Southdown Road, Suite 147, Missisauga Ontario L5J 2Z1, Canada (A. L. Jain).

0271-5317/02/$ – see front matter
PII: S0271-5317(01)00369-4

Table 1
Effect of nutritional supplement on respiratory illness

Parameter	Supplement	Placebo	*p*
Number of episodes	4.0 ± 0.7	6.5 ± 1.0	NS
Number of days of illness/12 months	14 ± 2	29 ± 4	<0.03
Number of days of antibiotic usage	27 ± 4	58 ± 5	<0.02

NS = statistically not significant, $p > 0.05$. Data are shown as Mean ± SD.

study to examine the effect of a multinutrient supplement that contains all the essential vitamins and trace-elements [5]. This a brief report of the findings.

2. The study and results

There were 36 subjects who took part in our study. The age ranged from 51 to 78 years. None of them had any obvious medical disorder. On a random basis, we gave 18 (11 men, 7 women) of them one capsule of a nutritional formula [5] daily by mouth. The remaining 18 (11 men, 7 women) individuals were given a similar looking capsule.

The composition of the supplement was identical to the one used in an earlier study in Canada [5]. The daily oral dose contained vitamin A 400 retinol equivalent, beta-carotene 16 mg, thiamin 2.2 mg, riboflavin 1.5 mg, niacin 16 mg, vitamin B6 3.0 mg, folate 400 mcg, vitamin B12 4.0 mcg, vitamin C 80 mg, vitamin D 4.0 mcg, vitamin E 44 mg, iron 16 mg, zinc 14 mg, copper 1.4 mg, selenium 20 mcg, iodine 200 mcg, calcium 200 mg and magnesium 100 mg. The identical looking "dummy" capsule contained calcium 200 mg and magnesium 100 mg.

The study subjects were asked to report to us once in a month and any other time whenever they felt unwell. Thus, all illnesses were recorded. The clinical history was substantiated by medical examination and relevant tests, such as total and differential white blood cell counts, radiographs of the sinuses and chest, sputum culture, and erythrocyte sedimentation rate. The observation period was one year covering all the seasons for each person.

The results are shown in Table 1. There were fewer episodes of respiratory infection in the treated group but the differences were statistically not significant. However, the supplemented individuals experienced fewer total days of respiratory illness (14 ± 2) as compared with those who took the dummy pill (29 ± 4 days) ($p<0.03$). This observation was supported also by fewer days of antibiotic use by those in the treated group (27 ± 4 days, compared with 58 ± 5 days in controls) ($p<0.02$).

3. Comments

A previous study [5] had shown that the administration of multivitamins and trace minerals boosts immunity and reduces the occurrence of infections, both mild ones and severe ones. This resulted in less illness and less frequent use of antibiotics. We have

replicated the clinical part of the study in another group, using clinical and relevant laboratory tests to document infection. It was clear that the persons taking the supplement had fewer days of respiratory infection. Although not tested in this study, the increase in immune responses brought about by the nutritional supplement as reported in the earlier study may well have led to the reduced morbidity in our subjects.

The cost of such a multinutrient supplement is very small, approximately Rs. 10 ($0.21) per day, whereas the treatment (physician fees, laboratory tests, medicines) of infections is very costly, approximately Rs. 300 ($6.25) per day of treatment, particularly when newer antibiotics have to be used for 7–14 days for patients with sinusitis or bronchitis or pneumonia. Antibiotics are often prescribed for periods longer than the actual days of clinical manifestations (Table 1) in the belief that such a course would eradicate the causative microorganisms.

Based on the results of our study and the published literature, it is suggested that such a supplement of vitamins and trace-elements be prescribed to all persons above 50 years of age in all countries and that this would be a cost-beneficial intervention.

References

[1] Fox RA. Immunology and infection in the elderly. Edinburgh: Churchill Livingstone, 1984. p. 289–299.
[2] Chandra RK. Nutrition, immunity and infection; present knowledge and future directions. Lancet 1983;I: 688–91.
[3] Chandra RK. Nutrition, immunity and infection. Proc Natl Acad Sci USA, 1996;93:14304–7.
[4] Gershwin ME, Beach RS, Hurley LS. Nutrition and immunity. New York: Academic Press, 1984.
[5] Chandra RK. Effect of vitamin and trace-element supplementation on immune responses and infection in elderly subjects. Lancet 1992;340:1124–7.