ORIGINAL ARTICLE

Role of folic acid supplementation in prevention of neural tube defects: physicians yet unaware!

A. AGGARWAL, G. DAS KUMHAR, D. HARIT, MMA FARIDI
Department of Pediatrics, University College of Medical Sciences, Guru Tegh Bahadur Hospital, Delhi, India

Key words

Folic acid supplementation • Neural tube defects • Physician awareness

Summary

Folic acid supplementation is important in the prevention of Neural Tube Defects (NTD). The study was conducted to assess the awareness amongst physicians regarding the role of Folic Acid (FA) in the prevention of NTD. Physicians were interviewed regarding the awareness of FA dose, timing of supplementation and knowledge about its role in prevention of neural tube defects using a semi-structured questionnaire. Among 202 physicians interviewed (48 pediatricians, 54 obstetricians, 100 recently qualified medical graduates) overall awareness about FA was present in 92.07%, similar in three groups (P > 0.05). Only 47.52% were aware of pre-conception administration, 61.38% about dose of supplementation and 11.88% about recurrence rate of NTD. Only 15 (7.4%) knew all these. Regarding the etiology of NTDs only 26.7% said both FA and genetic factors are involved. Though majority were aware that folic acid has a role in prevention of NTDs, their knowledge about timing and dose of supplementation was lacking. Hence attempts should be made to increase the awareness regarding prevention of NTD's by FA supplementation at a proper time.

Introduction

Neural Tube Defects (NTD) are group of defects which result from failure of the closure of neural tube between 3rd and 4th week of gestation. Its spectrum varies from conditions incompatible with life (anencephaly) to conditions which might go unnoticed (spina bifida occulta). NTD has multi factorial etiology but supplementation of Folic Acid (FA) in maternal diet has been found to reduce its incidence. Today most of the developed nations recommend daily intake of 400 microgram FA pre-conception, continued into first trimester. Many countries advocate flour fortification with folic acid [1]. Countries like USA and Canada have significantly brought down the incidence of NTD by universal supplementation of folic acid before and during pregnancy [2, 3].
The incidence of NTD in India varies from 0.5-11/1000 live births [4]. Since health care providers are an important means of spreading awareness, we conducted a study to test the knowledge of physicians (pediatricians, obstetrician and recently qualified medical graduates) on role the of FA supplementation for prevention of NTD.

Methods

Research participants were 100 recently qualified medical graduates, 48 Pediatricians and 54 obstetricians. They were interviewed by using a semi structured questionnaire after an informed consent. A semi structured questionnaire consisted of questions regarding the dose, duration and timing of folic acid supplementation. Their knowledge regarding the etiology, screening and prevention of NTD was also assessed. Open ended questions were asked regarding, dose, timing and etiology. Daily dose of 0.4 mg for primary prevention and 4 mg for secondary prevention was considered correct. A recurrence risk of 3-5% was taken as correct answer. Results were analyzed using EPI info and odds ratio was calculated for difference in knowledge among the three groups.

Results

Overall 92.1% were awareness about the role of FA: obstetricians (98.14%), pediatrician (97.9%) and recently passed medical graduates (87%). Only 35.1% were aware about both correct dose and preconceptional administration of folic acid (47.52% knew about preconceptional administration and 61.38% knew about the dose of supplementation). When asked about the etiology: 33.6% implicated genetic reasons, 27% implicated FA deficiency, 26.7% said both and 12.3% were unaware of the etiology. Table 1. depicts the awareness about folic acid in various groups and their comparison. There was significant difference in the three groups ($p < 0.05$) regarding awareness of dose and preconception administration of folic acid but no difference in awareness of recurrence rate which was uniformly low (11.88%). When pediatricians and obstetricians were compared to recently qualified medical graduates awareness about the dose was significantly more in obstetricians and pediatricians ($P < 0.001$, odds ratio 4.2, CI-2.19-8.10). Knowledge about preconceptional administration was more in obstetricians and gynecologists compared to recently qualified medical graduates ($P < 0.001$, odds ratio

Tab. I. Awareness about folic acid in various groups.

	Pediatricians N = 48 No. (%)	Obstetricians N = 54 No. (%)	Recent graduates N = 100 No. (%)	Total N = 202 (%)
Folic Acid				
-aware	47 (97.9)	53 (98.14)	86(86)	92.08
-unaware	1 (2.08)	1 (1.85)	14(14)	7.92
Dose*				
- aware	33(68.75)	46 (85.18)	45(45)	61.38
- unaware	15 (31.25)	81 (4.8)	55(55)	38.61
Preconception*				
-aware	24 (50)	40 (74.07)	32(32)	47.52
-unaware	24 (50)	14 (25.92)	68(68)	52.47
Recurrence				
-aware	3 (6.25)	9 (16.6)	12(12)	11.88
-unaware	45 (93.75)	45 (83.33)	88(88)	88.11

* $P < 0.05$ (comparison of three groups).

3.58, CI1.92-6.69). Only 15 (7.4%) had correct answers to all the four facts in table 1. Seventy one (35.1%) were aware of folic acid, its dose and preconception administration. Seventy one percent acquired this knowledge from books and 26.7% were aware that etiology is genetic as well as environmental.

Discussion and conclusions

Our study showed that although most of the physicians knew about the role of FA in prevention of NTDs most of them did not know the correct dosage, timing and duration of administration of folic acid required. There was considerable lack of knowledge regarding role of FA supplementation in the prevention and recurrence of NTDs, especially about the dose and the fact that it has to be given before conception. Obstetricians had better awareness about the various aspects studied. These findings are similar to the study by Huaser and Lilly (2004) where 89% of obstetricians as compared to 65% of the pediatrician knew about the recommended dose of FA [5].

We also found that awareness is less at the end of medical curriculum compared to doctors with some experience. Since the numbers were small we could not randomize the subjects according to their maximum qualification and the years of experience in the concerned specialty.

Among 48 pediatricians, 54 obstetricians, 100 recently qualified medical graduates overall awareness about FA was similar in the three groups. But only 15 (7.4%) were aware of preconception administration, supplementation and recurrence rate of NTD. Folic acid was implicated in etiology by 26.7%. Hence though majority were aware that folic acid has a role in prevention of NTDs, their knowledge about timing and dose of supplementation was lacking. Therefore we need to increase the awareness among all health care professionals regarding prevention of NTDs by FA supplementation before conception in adequate doses. This needs to be emphasized in medical curriculum as well.

References

[1] United States Food and Drug Administration. *Food standards.* Fed Regist 1996;61:8781-97.

[2] Czeizel AE, Dudas ID. *Prevention of the first occurrence of neural tube defects by periconceptional vitamin supplementation.* N Eng J Med 1992;327:1832-5.

[3] Czeizel AE. *Reducing risk of birth defects with periconceptional micronutrient supplementation.* Nestle Nutrition Workshop Series Pediatric Program 2003;52:309-25.

[4] Godbole K, Deshmukh U, Yajnik C. *Nutrigenetic determinants of neural tube defects in India.* Indian Pediatr 2009;46:467-75.

[5] Hauser KW, Lilly CM, Frias JL. *Florida health care providers' knowledge of folic acid for the prevention of neural tube defects.* South Med J 2004;97:437-9.

■ Received on April 16, 2010. Accepted on August 2, 2010.

■ Correspondence: Anju Aggarwal, Flat No. 3C, Block C2B, Janakpuri, New Delhi 110058, India - E-mail: aanju67@gmail.com