HOSTED BY
ELSEVIER
Contents lists available at ScienceDirect
Asian Pacific Journal of Tropical Biomedicine
journal homepage: www.elsevier.com/locate/apjtb

Review article http://dx.doi.org/10.1016/j.apjtb.2015.12.021

Breastfeeding counsel against cancers

Prameela Kannan Kutty*

MAHSA University, Department of Paediatrics, Faculty of Medicine, Jalan University Campus, Jalan University, 59100, Kuala Lumpur, Malaysia

ARTICLE INFO

Article history:
Received 3 Nov 2015
Received in revised form 30 Nov 2015
Accepted 20 Dec 2015
Available online 31 Mar 2016

Keywords:
Anticancer
Breastfeeding
Well being
Counselling
Nutrition

ABSTRACT

The anticancer potential by breastfeeding is not fully tapped in the light of the present knowledge of the subject. Literature indicates that breastmilk has anticancer action but may underestimate its full capacity. The protective spectrum within breastmilk hints on the need for a more comprehensive understanding of it as an anticancer tool. Exclusive breastfeeding could confer protection from carcinogenesis with a greater impact than realised. A literature review was conducted using four electronic databases. Selected areas were extracted after thorough perusal of the articles. The uninitiated would take exclusive breastfeeding seriously if actively counselled as an anticancer tool. Advice on details of the breastfeeding process and holistic information on breastfeeding may endow a greater impact among the skeptics. Counselling the breastfeeding mother on information sometimes not imparted, such as on maternal nutrition, details of the process of breastfeeding, benefits of direct breastfeeding versus milk expression and her psychosocial well being may make a difference in optimising anticancer action that exists in breastmilk. Additionally, its anticancer potential provides a platform to universally improve physical and psychosocial well being of women who breastfeed. Statistics of protection by breastfeeding in some maternal and childhood cancers are evident. "Bio-geno-immuno-nutrition" of breastmilk may shield the mother and infant from carcinogenesis in more ways than appreciated. The molecular basis of mother-to-infant signals and their "energies" need to be researched. Breastfeeding as a modifiable behaviour provides cost effective nutrition with potential for both cancer immunoprophylaxis and immunotherapy.

1. Introduction

The protective potentials within the lactating mammary gland against cancers are known [1–3]. Despite some statistical support, the actual numbers of children protected from cancers by breastfeeding may never be fully appreciated or appraised as many more children destined to enjoy such protection die of other causes; infections, being the commonest cause of childhood mortality [4]. This article reviews some statistics of breastfeeding protection from cancers for the breastfeeding mother and child, discusses the multifactorial causes of cancers and, based on these causes, reflects on the potentials within breastmilk that protect from the aetiopathogenesis of carcinogenesis.

2. Statistical relevance of breastfeeding and cancer protection in mother and child

Statistics indicate some level of protection by breastfeeding against cancers for the mother and infant [1–3]. For the mother, cohort studies suggest that each month of breastfeeding reduces the relative risk of ovarian cancers by 2% [relative risk = 0.98 per month, 95% confidence interval (*CI*) 0.97–1.00] [1]. Breastfeeding was found to have a significant role in reducing breast cancer, whereby activities to promote breastfeeding by information, education, and communication to inculcate awareness about breast cancer have been recommended [2]. In women who carried the *BRCA1* mutation, those who breastfed for at least one year had a 32% reduction

*Corresponding author: Prameela Kannan Kutty, MAHSA University, Department of Paediatrics, Faculty of Medicine, Jalan University Campus, Jalan Universiti, 59100, Kuala Lumpur, Malaysia.
Tel: +60 012 2121712
E-mail: prameela.kutty@yahoo.com

Peer review under responsibility of Hainan Medical University. The journal implements double-blind peer review practiced by specially invited international editorial board members.

2221-1691/Copyright © 2016 Hainan Medical University. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

in risk of breast cancer [odds ratio (OR) = 0.68, 95% *CI* 0.52–0.91, *P* = 0.008]; breastfeeding for two or more years conferred a greater risk reduction (OR = 0.51, 95% *CI* 0.35–0.74) [5]. Among *BRCA2* mutation carriers, no noted link was found between at least a year's breastfeeding and breast cancer risk (OR = 0.83, 95% *CI* 0.53–1.31, *P* = 0.43) [5]. The effect of parity on a woman's long-term risk of breast cancer is modified by age at first full-term pregnancy and possibly by breastfeeding [6]. Protection against aggressive basal breast carcinomas as opposed to intraluminal tumours was seen in women who breastfed [7]. For children, ever having breastfed were associated with a 21% reduction in risk of childhood acute leukaemias (OR for all types combined = 0.79, 95% *CI* 0.70–0.91) [8]. In the commonest childhood tumours, breastfeeding and delayed introduction of artificial formula reduce the risk of acute lymphoblastic leukaemias but not childhood brain tumours [9]. According to a meta-analysis, compared with no or shorter breastfeeding, any breastfeeding for 6 months or longer had a 19% lower risk for childhood leukaemia (OR = 0.81, 95% *CI* 0.73–0.89) [3]. Two meta-analyses found a 1.3-fold higher risk of acute lymphoblastic leukaemias (95% *CI* 1.1–1.4) among formula-fed children compared with children who were breastfed for less than 6 months [10,11], and a 1.2-fold higher risk of acute myeloid leukaemia (95% *CI* 1.0–1.4) in formula-fed infants compared to infants breastfed for more than 6 months [10]. Another meta-analysis indicated that ever breastfed compared with never breastfed had a 11% lower risk for childhood leukaemia (OR = 0.89, 95% *CI* 0.84–0.94) [3].

3. Multifactorial causes of cancer

The multifactorial aetiologies and time sequence of carcinogenesis are not entirely known. Microbial homeostasis, immunocompetence, intact gut mucosae and regulated inflammation protect from carcinogenesis [12].

Over 20% of malignancies worldwide are attributed to infectious agents [13]. Viruses by direct expression of viral oncogenes, can cause cancer, or exert indirect effects by persistent inflammation [13].

Virchow postulated carcinogenesis as an infection related consequence of loss of epithelial integrity and proinflammatory processes [14]. Bacterial and parasitic causes of cancers are well recognised [15,16]. Immunosuppression in the absence of cancer surveillance contributes to carcinogenesis [13].

3.1. Influence of more than one agent in cancer causation

Additive or synergistic influence of two or more agents may lead to cancer and is known as co-carcinogenesis [17]. Human papilloma viruses, cervical tar exposures and fumes by coal or wood-burning stoves causing cervical cancer is an example of such synergy [18].

3.2. Suppression of cellular immunity and the link to cancers

Suppression of cell mediated immunity predisposes to infectious cancers [13], including Kaposi's sarcoma-associated herpesvirus-linked lymphomas, Kaposi's sarcoma-associated herpesvirus sarcomas, Ebstein-Barr virus, human papilloma viruses, head and neck and cervical carcinomas and Merkel cell carcinomas [13,19]. HIV is an indirect carcinogen and HIV-induced immunosuppression promotes the development of tumours [20].

3.3. Early exposures, nutritional influences and specific cancers

Early exposures could initiate carcinogenesis and subsequent infections can trigger cancers [21]. Micronutrient deficiencies contribute to squamous cell oesophageal cancer and the potential prevention, through dietary diversification and increased consumption of rich sources of selenium and zinc have been proposed in endemic areas [22]. Obesity predisposes to cancers of the urogenital tract, gastrointestinal tract, liver, endometrium and breast [23].

3.4. Some dietary genotoxins and their links to cancers

Dietary genotoxins are carcinogens in cooked food, some plants and mushrooms, fungal products, nitrites, polycyclic aromatic hydrocarbons and oxidative agents [24–26]. Heterocyclic amines are associated with breast, colonic and prostatic cancers [25,26].

3.5. The association of cancer to some drugs and hormones

Drugs and hormones may have a role too. Sex hormones, implicated in gene expression could lead to carcinogenesis of the head and neck [27].

3.6. Lifestyle factors and cumulative exposures in cancer causation

Lifestyle factors contribute to the global cancer incidence and estimates from the World Health Organization and the International Agency for Research on Cancer are that toxic environmental exposures contribute about 7%–19% to cancers [28]. The cumulative effects of non-carcinogenic chemicals could act via different mechanisms affecting organ systems, tissues and cells to produce cancers [28].

4. Breastmilk cancer protection

As an effective anticancer tool, breastmilk must incorporate overt or covert mechanisms as well as specific and nonspecific means to destroy cancer cells. Nonspecifically, it must promote an environment not conducive for the establishment of tumours by reducing or counteracting the multifactorial causes of cancers, remove early tumour nidus and provide a milieu that does not encourage tumour progression and metastases. A central antitumour mechanism is apoptosis or programmed cell death [29]. Directly, ideal antitumour action must promote apoptosis in tumours and spare normal cells. As an anticancer tool, breastmilk must also have the potential to overcome mechanisms deployed by tumours to evade the immune system. Additionally, anticancer action must include the capacity to decrease or eliminate tumour predisposition and improve innate immunity of surrounding tissue so that apoptotic cells are removed and normal cells continue to thrive.

Download English Version:

https://daneshyari.com/en/article/2032534

Download Persian Version:

https://daneshyari.com/article/2032534

Daneshyari.com