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Exploring of Hidden Anaemia among Asymptomatic Women in a Unique Health Check-up Institute, Ningen Dock in Japan

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Abstract

In Japan, there are unique facilities (namely Ningen Dock) of health check-up provide seemingly healthy participants a health examination including health and cancer screening activities at their own expense. The most advanced examination equipment and examinations do not only provide high accuracy but they also reduce stress on the body of a participant. Using the medical equipment and diagnostic techniques allows for successful detection of many diseases while in early stages development. This early detection of masked critical problems leads to quicker response to disease. This communication evaluated an assure role of Ningen Dock in evaluation of hidden anaemia among asymptomatic women. In participants with haemoglobin (Hb) level < 10.0 g/dl, the percent of women who experienced dyspnoea, weakness, constipation and fatigue is significantly higher than in other two groups. The mean number of persons with menopause, hyper menorrhea and irregular bleeding were significantly correlated with the group with Hb level < 10.0 g/dl. We recommend a thorough uterus and reproductive work-up by gynaecologist for any women with Hb level < 10.0 g/dl.

Keywords: Health Check-Up; Ningen Dock; Hidden Anaemia; Attitude Toward Screening; Cancer Screening Activities; CT Scans, MRI Scans; Asymptomatic Women; Matsunami; Hyper Menorrhea

Introduction

Anaemia is a significant public health concern that affects approximately 20 % of the global population. Women of reproductive age are at an increased risk of anaemia [1-3]. That condition reduces physical work capacity but there are, at present, no recommendations for routine anaemia check-up of non-pregnant and well-being women [4], although anaemic screening is a relatively simple, low cost and non-invasive method. In Japan, there are unique facilities (namely Ningen Dock) of health check-up provide seemingly healthy participants a health examination including cancer screening activities at their own expense [5]. Japan is indeed the most advanced medical devices country in the world. For example, about half of the CT scans and about 1/3 of the MRI scans are owned by medical facilities in Japan. The most advanced examination equipment and examinations do not only provide high accuracy but they also reduce stress on the body of a participant. Using these medical equipments and diagnostic techniques allows for accurate detection of certain diseases while in early stages development. This early detection leads to quicker response to disease. These situations prompted us to evaluate a significant role of Ningen Dock in exploring hidden anaemia even of asymptomatic women.

Materials and Methods

Between April 2016 and March 2017, 3,385 asymptomatic women, age 18-85, visited the Ningen Dock in Matsunami General Hospital for their general health check-up. All participants underwent medical evaluations including a medical history, physical examination, blood sampling, and urine sampling and radiological imaging as part of a routine health check-up and cancer screening [6]. Using univariate analysis, anaemia prevalence was compared by background characteristics, reproductive variables and lifestyle characteristics. This study was approved by the institutional review board at Matsunami General Hospital, and the need for informed consent was waived. Data and statistical analyses were done with IBM SPSS Statistics 24. For all the statistical tests, level of significance $P < 0.05$ was considered.

Results

Table 1 shows the distribution of haemoglobin (Hb) levels status by various study characteristics and general condition concerns. We found significant ($P < 0.05$) variation in reproductive variables (menopause, hyper menorrhea and irregular bleeding) and lifestyle characteristics (unbalanced diet and fast walking speed) among Hb

levels status. In participants with Hb level < 10.0 g/dl, the percent of women who experienced dyspnoea, weakness, constipation and fatigue is significantly higher than in other two groups. The mean number of persons with menopause, hyper menorrhea and irregular bleeding were significantly correlated with the group with Hb level < 10.0 g/dl.

Table 1: Distribution of female participants by study characteristics and hemoglobin level status Between April 2006 and March 2017, 3,385 asymptomatic women, age 18-85, visited the Ningen Dock in Matsunami General Hospital for their general health check-up. BMI, body mass index MCV, mean corpuscular volume; TG, triglyceride; LDL, low density lipoprotein-cholesterol. *P < 0.05. The lowest hemoglobin level was 5.9 g/dl.

	Hemoglobin levels (g/dl)		
Variables	**<10.0 (n=149)[a]**	**10.1-11.0 (n=180)**	**11.1< (n=3,056)**
Age in years	44.4 ± 6.1	45.2 ± 7.9	48.0 ± 10.8
BMI (kg/m^2)	21.7 ± 3.2	21.4 ± 3.7	21.6 ± 3.6
Blood pressure (mmHg)	114±8/69±8	115±16/70±11	118±/73±11
MCV (fl)	72.2 ± 7.0*	81.1 ± 6.8	88.8 ± 4.2
Platelets (x10^4/μl)	31.5 ± 8.3*	26.3 ± 6.3	22.5 ± 5.2
TG (mg/dl)	69 ± 37	74 ± 38	83 ± 47
LDL (mg/dl)	106 ± 26	114 ± 27	119 ± 30
Albumin	4.28 ± 0.20	4.32 ± 0.24	4.43 ± 0.23
HbA1c (%)	5.5 ± 0.3	5.5 ± 0.3	5.5 ± 0.5
Palpitation	9.4%	8.3%	7.8%
Dyspnea	8.1%*	5.6%	3.5%
Weakness	22.1%*	18.3%	9.4%
Constipation	28.9%*	23.9%	19.5%
Fatigue	23.5%*	27.8%	18.4%
Unbalanced diet	38.5%*	40.0%	31.5%
Menopause	4.1%*	13.2%	41.8%
Hypermenorrhea	36.2%*	25.2%	11.2%
Irregular bleeding	14.1%*	7.3%	4.5%
Diet	13.5%*	19.9%	22.8%
Fast walking speed	26.4%*	36.4%	46.0%
Anemic therapy experience	52.3%*	37.2%	11.9%

Discussion

Low Hb level is an alarm sign that needs to evaluate for its etiology and must be appreciated for both its primary medical impact on the patient and it's secondary impact on the patient's co morbidities [1,7]. The present communication found the extremely assure role of Ningen Dock to screen the hidden anaemia in asymptomatic women. Our observation supports the idea of significant variation in reproductive variables and lifestyle characteristics among haemoglobin (Hb) levels status. This finding may recommend a thorough myoma and reproductive work-up by gynaecologist for any women with Hb level < 10.0 g/dl. Women's attitudes and beliefs related to screening frequency may differ if they reflected truly informed preference and may be related to less screening. Not paying attention to health screening is risk factors for non-attendance to health check-up [6].

The most important risk factor for non-attendance to health check-up includes not paying attention to health screening. Ningen Dock check-ups provide an occasion to realize preventive medicine. An important aim of health check-up is to provide support to improving risk factors that accelerate the risk of outbreak of a critical disease at an early stage, before subjective symptoms become apparent. Additionally, meticulous educational guidance is provided to match individual living patterns, education level and ways of thinking. Ningen Dock can also conceive of a time in the future when more appropriate and effective educational advice could be continuously provided according to a participant cultural background and lifestyle habits, via collaboration with health-related public services. The present data is from subject to the limitations of any analysis of self-covered health check-up survey data from participants in a Ningen Dock in Japan. Although data are weighted to reflect the Japanese population, the extent to which results are generalizable is not known. Other and larger studies extended to non-Asian should attempt to oversample racial minorities and include a detailed assessment of whole body disease screening history and follow-up treatment.

Author's contribution

RK managed all data and performed the analyses. AI designed the study and drafted the manuscript. All authors participated general examinations in Ningen Dock and commented on various drafts and approved the final version of the manuscript.

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