Research Paper Medical Science

Causes of Cancer Disease in South-East in Iran – Genetic or Environmental

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ABSTRACT

The purpose of this study was to determine causes of cancer in three villages of south-east in Iran. The information were collected about cancer disease, type of cancer, causes of cancer, marriage and consumed food, in addition to follow up cancer patients in the area. The radioactivity concentration in drinking water, soil, air and food were reported by health office in regions. Radioactivity concentration was less level, below the risk limit in sources. The family marriage was causes of cancer incidence in the three regions. Natural radiation in sources of the regions was below average of standard level, therefore, only factor of marriage in family was cancer in people.

KEYWORDS cancer, radiation, soil, drinking water, radio nuclides

Introduction

The natural background concentration dose level was responsible for the occurrence of lung cancer in population [1]. The cause of bone cancer and nasal in painters of radium dial was ingestion of radium -228 and radium-226 that is a well documented in the issues[2]. The risk of developing bone cancers was incorporated and was impressive in magnitude and specific a bone cancer [3]. The studies of human treated with radium reveal increasing the risk of bone cancers [4]. DNA damage due to radiation exposures of 10, 50 or 100 mGy in comparison to exposure of 1 Gy was less [5]. The experiment showed protective effect was observed up to 24 hours after the low dose exposure [6]. The low dose exposures decreased activation of DNA damage. The ascending of radium content increased cancer disease in sources. Cancer disease was occurred in some individuals in regions of south-east city in Iran. Therefore, it was necessary to estimate causes of individual cancer in villages.

Method & Material

The villages of Gamdad, Shor-Shirin and Golchah around Zahedan city in Iran were as station. Cancer disease, type of cancer, genetics of cancer, ionizing radiation, cancer incidence, marriage with family or foreign and consumed food in above-mentioned three areas were collected, in addition to follow up cancer patients in the area with very distinct geological characteristics. The radioactivity concentration in drinking water, soil, air and food and identification of cancer cases were reported by health office which located in Zahedan city.

Results

The individuals with cancer disease in Gamdad, Shor-Shirin and Golchah villages showed in table 1. Ra-226 in drinking water was lower than 2mBq/L. EPA issued relatively 5 picocurie per liter (picoCi/l) for safety. Table 2 showed statistical results for consumed fruits, vegetables, nutrients. There was a weak positive relation between cancer rates and radioactivity of drinking water, but a weak negative relationship between cancer rate and radioactivity level in soil consistent with the hypothesis of no effect or a small effect. As shown by the wide confidence interval, estimates of radioactivity of specific rates were rather unstable. The results demonstrate less levels of radioactivity in water, and K-40, Ra-228 and Th-232 in soil. The radioactivity concentrations measurement ^{228}Ra in drinking water and underground water were generally below the detection limit.

Discussion

The cases of disease were 4%, 2%, and 2% in village (table1). The radioactivity concentration in the drinking water, air, food and soil were also less for getting cancer. The cancer disease was found significant[7]. Ra 228, 40K and 232Th in soil did not reveal any difference in concentrations with levels of standard world[8]. The characteristics of individual with cancer in three villages were getting marry in family at 45 year old, living and working under covered places. The adsorbed radioactivity was 0.055, 0.01, and 0.00 mGy in the environment. It meant the above-mentioned figures were below the standard of world. They consumed same food, vegetables and fruits without radioactivity matter. The radioactivity concentration was lower in drinking water supply, drinking water, soils, and air than cancer incidence[9]. There was less than 2 ρCi/l radioactivity content in drinking water. Data on cancer incidence caused by chronic exposures in people living in regions with naturally high background levels of radiation were reported [10]. The average annual effective dose was 6.4 mSv[11]. There was no significant increase in cancer incidence [12,13] in regions such as Yangjiang, China. Cancer incidence in Kerala, India ranged from 4–70 mGy/year, revealed no excess cancer risk [14].

Available information showed the only factor for cancer disease was marriage in family. The family marriage was significant, but nonfamily marriage was not.

The study was benefit of accurately defined exposure categories in a demographical stable area [15, 16]. Despite of similar study designs, this study did not yield the strong association previously reported with cancer in related issues of radioactivity[18]. Future study of cancer incidence and radioactivity concentration was needed to clarify the risk of cancer and other naturally occurring radioactivity. Individuals were at risk for cancer due to poor physiological body. The individuals consumed same nutrients in three villages. Information about vital sources and its pollution did not reveal, from view point of radioactivity, to be harmful. Therefore, the heredity factor was effective in cancer incidence. There were a growing number of research studies demonstrating evidence of protective effects of low dose [19], low dose rate radiation in various model systems [10] using numerous endpoints

Conclusion:

Preventive method of cancer disease should apply for people versus ionizing radiation.

Table1- Cancer frequency of cases in percent in villages Gamdad, Shor-Shirin and Golchah

village	individuals with cancer	Frequency in cases	Freq. of cancer %
1	2.00	20	4
2	1.00	20	2
3	3.00	20	6

Table2- Statistic results of cancer frequency

Cancer due to	villages	Frequency	Mean	Standard deviation	Significant	95% Confidence Interval of the Difference	
						lower	Upper
Edible Fruits	1 2 3	20 20 20	16.50 20.00 19.50	0.32 0.12 0.35	0.00 0.00 0.00	-0.3 -2.3 -1.3	-0.3 -1.3 -2.3
Edible Vegetable	1 2 3	14 15 14	17.20 11.00 17.00	0.54 0.21 0.24	0.001 0.002 0.001	-5.9 -6.0 -5.0	-1.6 -1.5 -1.5
Edible Nutrients	1 2 3	20 20 20	14.00 10.40 16.00	0.06 0.15 0.24	0.011 0.011 0.001	-9.8 -9.8 -8.0	-1.3 -1.3 -2.3
Marriage with foreign	1 2 3	20 20 20	11.35 18.30 13.00	8.73 4.54 4.00	0.30 0.30 0.30	-1.6 -1.6 -1.0	3.7 3.7 2.3
Marriage with family	1 2 3	20 19 20	17.50 18.36 17.55	3.70 4.85 0.90	0.001 0.001 0.001	2.3 2.3 1.2	7.9 7.9 2.3
Radioactivity In environment	1 2 3	20 20 20	0.55mGy 0.01 mGy 0.00 mGy	0.04 0.01 0.01	0.00 0.001 0.00	-0.06 -0.07 -0.02	0.02 0.01 0.03

REFERENCES

1.Zoliana B vanchhowongng L Romingliana PC Thapa rk Sahoo BK Mishera R Mayya YS The study of population dosmetry in highest lung cancer occurrence area in India. " J. Biomed Phys. Eng Shiraz-Iran , Nov 2-4 2011; 1:1 (suppl 1), 130. | 2. Reistad O, Dowdall M, Selnaes ØG, Standring WJ, Hustveit S, Steenhuisen F, Sørlie A. On-site radioactive soil contamination at the Andreeva Bay shore technical base, Northwest Russia. Environ Radioact 2008 Jul;99(7):1045-55. Epub 2008 Feb 13PMID: 18276046 [PubMed - indexed for MEDLINE | 3. Spies H Gerspach A Mays CW Soft tissues effect following Ra -224 injection into human, health phys 1978 35:61-81 | 4.Psichoudaki M Papaefthymiou H Natural radioactivity measurements in the city of Ptolemais (Northern Greece). ,. J Environ, Radioact. 2008 Jul;99(7):1011-7. Epub 2008 Feb 1. PMID: 18242798 [PubMed - indexed for MEDLINE | 5.de Toledo SM, Asaad N, Venkatachalam P, Li L, Howell RW, Spitz DR, Azzam EI. Adaptive responses to low-dose/low-dose-rate gamma rays in normal human fibroblasts: The role of growth architecture and oxidative metabolism. Radiation Research. 2006;166(6):849–857. [PubMed] | 5. UNSCEAR, united nation scientific committee on the effects of atomic radiation, (2000), sources and effects of ionizing radiation. Annex B: Exposures from national radiation sources. United Nations, New York, 125 pp. | | 6.Redpath JL, Liang D, Taylor TH, Christie C, Elmore B. The shape of the dose-response curve for radiation-induced neoplastic transformation in vitro, evidence for an adaptive response against neoplastic transformation at low doses of low-LET radiation. Radiation Research. 2001;156:700–707. [PubMed] | | 6. Neeshma J Malhotra sandeep K M[shera KP "Evaluation of radioactivity in water of river Ganges and its influence on ecobiotic system". J. Biomed Phys. Eng Shiraz-Iran , Nov 2-4 2011; 1:1 (suppl 1), 146. | 7.Robison WL, Noshkin VE. Radionuclide characterization and associated dose from long-lived radionuclides in close-in fallout delivered to the Total Environ.marine environment at Bikini and Enewetak Atolls. Health Phys. 1983;44 Suppl 1:113-21. | 8.Purhabib Z Binesh AR Mohammadi S "Evaluation of the radiation dose from radon ingestion and inhalation in drinking water, rivers, wells and springs of Ramsar in Iran" J. Biomed Phys. Eng Shiraz-Iran , Nov 2-4 2011; 1:1 (suppl 1), 150. | 9. Bhatt, T.M Posphate fertilizers a potential source for Uranium recovery as by product. A technical report no Paec/NIBGE-2/1994. Natonal institute for biotechnology and genetic engineering (NIGBE), Faisalabad, 1994.Skorovaro, J.I.L.I Rusin A.V.Lomonsev H.Chaforain A. | 10- Slavik O, Fulajtar E, Müller H, Pröhl G Model for food chain transfer and dose assessment in areas of the Slovak Republic. Radiat Environ Biophys. 2001 Mar;40(1):59-67 PMID: 11357712 [PubMed - indexed for MEDLINE PMID: 16775475 [PubMed - indexed for MEDLINE | 11.Purhabib Z Binesh AR Mohammadi S "Evaluation of the radiation dose from radon ingestion and inhalation in water supplies Sadatshahr and Javaherdeh in Iran" J. Biomed Phys. Eng Shiraz-Iran , Nov 2-4 2011; 1:1 (suppl 1), 150. | 12.Soto J, Fernández PL, Gómez J, Ródenas C Study of the occurrence of 222Rn and 226Ra in drinking water in Spain. Health Phys.1995 Dec;69(6):961-5 | 13.Tao Z, Zha Y, Akiba S, Sun Q, Zou J, Li J, Liu Y, Kato H, Sugahara T, Wei L. Cancer mortality in the high background radiation areas of Yangjiang, China during the period between 1979 and 1995. Journal of Radiation Research. 2000;41(SUPPL):31–41. [PubMed] | 14.Straume T, Anspaugh LR, Marchetti AA, Voigt G, Minenko V, Gu F, Men P, Trofimik S, Tretyakevich S, Drozdovitch V, Shagalova E, Zhukova O, Germenchuk M, Berlovich S. Health Phys. Measurement of 129 I and 137 Cs in soils from Belarus and reconstruction of 131I deposition from the Chernobyl accident 2006 Jul;91(1):7-19 | 15. Damla N Cevik U , Kobya AI, Ataksor B, Isık U Assessment of environmental radioactivity for Batman, TurkeyEnviron Monit Assess. 2008 Dec 13. [Epub ahead of print] PMID: 19083109 [PubMed - as supplied by publisher] | 16. Kluszczyński D, Tybor-Czerwińska M, Kacprzyk J, Kamiński Z Concentrations of natural 226Ra and 222Rn radioisotopes in the water from deep well intakes in the vicinity of Lódź Med Pr. 2006;57(5):451-4. | 17.Nair RRK, Rajan B, Akiba S, Jayalekshmi P, Nair MK, Gangadharan P, Koga T, Morishima H, Nakamura S, Sugahara T. Background radiation and cancer incidence in kerala, india-karanagappally cohort study. Health Physics. 2009;96(1):55. [PubMed] | 18. Hosseini S.A. The radionuclides in piping drinking water, cultivated soil and food material from Zahedan city. 2007 summer 9(2), 141-147 | 19. Muth H, Glöbel B. Age dependent concentration of 226Ra in human bone and some transfer factors from diet to human tissues. Health Phys. 1983;44 Suppl 1:113-21. | |