

Odontology Concern on Some Specific Odontogenic Problems due to Nuclear Leakage Crisis

Viroj Wiwanitkit

ABSTRACT

The recent nuclear crisis in Japan leads to concern on its health effect. Although there are many reports on its possible unwanted effects on many systems in human body, the specific report on odontology aspect is limited. In this brief review, the author hereby presents the specific concerns on odontology focus on some specific odontogenic problems due to nuclear leakage crisis.

Keywords: Odontology, Nuclear, Leakage, Crisis.

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INTRODUCTION

Last year (2011), there is a big sea earthquake near the seashore of Japan. This natural disaster caused a big Tsunami attacks to Japan. The serious destroyed nuclear electricity power plants occurred and this leads to the out spreading of ionizing hazard radioactive elements. This recent nuclear crisis in Japan leads to concern on its effect on health.¹⁻⁴ Although there are many reports on its possible unwanted effects on many systems in human body, the specific report on odontology aspect is limited. Indeed, few evidences are given on dental issue⁵ and fewer evidences are given on the specific odontology aspects. To add more specific knowledge on odontogenic problem can be useful additional information in dental medicine. In this brief review, the author hereby presents the specific concerns on odontology aspect of nuclear leakage crisis.

Odontogenic Tumor and Nuclear Crisis

Indeed, an important concern on the subjects exposed to leaked radionuclides is the development of cancers.¹ The stimulation of tumorigenesis due to direct DNA alteration due to ionizing radioactive nuclides can be observed and this is the important reason for cancer development.¹ However, most previous evidences confirm for only the thyroid carcinogenesis. Focusing on odontogenic tumorigenesis, there are very few reports.

Based on the previous well-known nuclear crisis, the Chernobyl crisis, although there are many studies on cancers, there is no clear evidence on odontogenic tumor formation due to exposure. However, it is reported for the

observation on odontogenic sarcoma in maxilla of the cleaner of Chernobyl crisis.⁶ There is a study confirming that exposure to radioactive nuclides can lead to development of odontosarcoma in rat model.⁷ The radioactive cesium which is also the important leaked component was proved to contribute to stimulation of odontosarcoma generation.⁷

Tooth Formation Problem and Nuclear Crisis

The problem of nuclear crisis exposure to the offspring is confirmed. After the Chernobyl crisis, the following up in 20 years showed the increased tooth and mouth problems in the offspring of the people in contaminated area.⁸ The effect of radioactive nuclides on tooth germ is an interesting topic. It is no doubt that tooth can be the good specimen for monitoring radioactive exposure in either acute or chronic stage.⁹⁻¹⁰ The significant change in odontogenic cell can be observed and this is believed to be the possible cause of future tooth problem, if the exposed subjects are young children.¹¹ The dental problem due to nuclear crisis is confirmed. The problems are usually dental caries and problem of dental jaws in the exposed subjects.⁵

However, those are the problems in the subjects directly exposed to the nuclear crisis. The mechanism for the offspring problem is not well clarified. Theoretically, during the formation of branchial arch, closed relationship of odontogenic epithelium of the mandible and thyroid can be seen. If the alteration of thyroid in the offspring exposed to nuclear crisis can be seen, the similar problem for the tooth term might be expected.¹¹

CONCLUSION

There are some possible odontogenic problems due to nuclear crisis exposure. However, limited evidences are available. Based on the present nuclear crisis, it is suggested for further study on odontology aspect in subjects in the contamination area.

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ABOUT THE AUTHOR

Viroj Wiwanitkit

Professor, Department of Dentistry, Hainan Medical University Haikou, China, e-mail: wviroj@yahoo.com