



## A Case of Severe Mercury Intoxication with Unknown Source

### Bilinmeyen Kaynaktan Şiddetli Merkür İntoksikasyonunun Olgusu

A Case of Severe Mercury Intoxication with Unknown Source

SMJ Mortazavi<sup>1,2</sup>, Ghazal Mortazavi<sup>3</sup>

<sup>1</sup>Medical Physics Department, School of Medicine, Shiraz University of Medical Sciences,

<sup>2</sup>Ionizing and Non-ionizing Radiation Protection Research Center (INIRPRC), Shiraz University of Medical Sciences,

<sup>3</sup>Dentist, School of Dentistry, Shiraz University of Medical Sciences, Shiraz, Iran

#### To the editor:

With great interest we read an article by Gündüzöz et al. entitled "A Case of Severe Mercury Intoxication with Unknown Source" that is published in the JCAM July 2014, DOI: 10.4328/JCAM.2621[1]. In this article, the authors presented a 43 year-old male with non-specific symptoms such as severe taste disorder, metallic taste in mouth, weight loss and severe sleep disorder. Gündüzöz et al. reported that they could not find the origin of mercury exposure in their patient. Interestingly, they also reported that in physical examination of the patient's tongue, four amalgam fillings were observed. Unfortunately, these authors did not rule out the significant role of the exposure of dental amalgam restorations to common sources of electromagnetic fields (e.g. Wi-Fi, mobile phones and mobile base stations) in enhancing the release of mercury from dental amalgam fillings. Over the past several years, our lab at the Ionizing and Non-ionizing Radiation Protection Research Center (INIRPRC) has performed extensive experiments on the health effects of exposure of animal models and humans to different sources of electromagnetic fields such as cellular phones [2-9], mobile base stations [10], mobile phone jammers [11], laptop computers [12], radars [3], dentistry cavitrons [13] and MRI [14, 15].

In 2008, we published our first report on the role of exposure to MRI or microwave radiation emitted by mobile phones in enhancing the release of mercury from dental amalgam restoration[8]. On the other hand, we have recently studied the effects of stronger magnetic fields (1.5 T in our recent study vs. 0.25 T in our previous report) and found further evidence which support the adverse effect of MRI in increasing the release of mercury from dental amalgam fillings[16]. It should be noted that results obtained in microleakage studies also confirm that exposure of amalgam to electromagnetic fields accelerates the microleakage of amalgam [17, 18]. Moreover, we have shown that a few published papers which reported no increased release of mercury after MRI, may have some methodological flaws [19].

Therefore, we strongly believe that the role of rapidly increasing exposure to different sources of electromagnetic fields (e.g. Wi-Fi, mobile phones, mobile base stations) in increasing mercury release from dental amalgam restorations is simply ignored in the study of Gündüzöz et al. We hope that these comments will be useful in better understanding of the challenging issue of increased release of mercury from dental amalgam restoration after exposure to electromagnetic fields and obtaining more credible results in the future.

### Competing interests

The authors declare that they have no competing interests.

### References

1. M. Gündüzöz, A Case of Severe Mercury Intoxication with Unknown Source, *JCAM*, 1289 (2014) 35.
2. S.M.J. Mortazavi, M. Motamedifar, G. Namdari, M. Taheri, A.R. Mortazavi, N. Shokrpour, Non-Linear Adaptive Phenomena which Decrease the Risk of infection after Pre-Exposure to Radiofrequency Radiation, Dose-Response, (in press).
3. S.M.J. Mortazavi, S. Taeb, N. Dehghan, Alterations of Visual Reaction Time and Short Term Memory in Military Radar Personnel, *Iranian J Publ Health*, 42 (2013) 428-435.
4. S.M.J. Mortazavi, M.S. Rouintan, S. Taeb, N. Dehghan, A.A. Ghaffarpanah, Z. Sadeghi, F. Ghafouri, Human short-term exposure to electromagnetic fields emitted by mobile phones decreases computer-assisted visual reaction time, *Acta Neurologica Belgica*, 112 (2012) 171-175.
5. S.M.J. Mortazavi, M.A. Mosleh-Shirazi, A.R. Tavassoli, M. Taheri, A.R. Mehdizadeh, S.A.S. Namazi, A. Jamali, R. Ghalandari, S. Bonyadi, M. Shafie, M. Haghani, Increased Radioresistance to Lethal Doses of Gamma Rays in Mice and Rats after Exposure to Microwave Radiation Emitted by a GSM Mobile Phone Simulator, Dose-response : a publication of International Hormesis Society, 11 (2013) 281-292.
6. S. Mortazavi, M. Mosleh-Shirazi, A. Tavassoli, M. Taheri, Z. Bagheri, R. Ghalandari, S. Bonyadi, M. Shafie, M. Haghani, A comparative study on the increased radioresistance to lethal doses of gamma rays after exposure to microwave radiation and oral intake of flaxseed oil, *Iranian Journal of Radiation Research*, 9 (2011) 9-14.
7. S.M.J. Mortazavi, A. Habib, A.H. Ganj-Karimi, R. Samimi-Doost, A. Pour-Abedi, A. Babaie, Alterations in TSH and Thyroid Hormones Following Mobile Phone Use, *OMJ*, 24 (2009) 274-278
8. S.M.J. Mortazavi, E. Daiee, A. Yazdi, K. Khiabani, A. Kavousi, R. Vazirinejad, B. Behnejad, M. Ghasemi, M. Balali Mood, Mercury release from dental amalgam restorations after magnetic resonance imaging and following mobile phone use, *Pakistan Journal of Biological Sciences*, 11 (2008) 1142-1146.
9. S.M.J. Mortazavi, J. Ahmadi, M. Shariati, Prevalence of subjective poor health symptoms associated with exposure to electromagnetic fields among University students, *Bioelectromagnetics*, 28 (2007) 326-330.
10. S.M.J. Mortazavi, Safety Issue of Mobile Phone Base Stations *Journal of biomedical physics & engineering*, 3 (2013) 1-2.
11. S.M.J. Mortazavi, Adaptive responses after exposure to cosmic and natural terrestrial radiation, *Indian Journal of Radiation Research*, (2004) 104-112.
12. S.M.J. Mortazavi, A.R. Tavasoli, F. Ranjbari, P. Moamaei, Effects of Laptop Computers' Electromagnetic Field on Sperm Quality, *Journal of Reproduction and Infertility*, 11 (2011) 251-258.
13. S.M. Mortazavi, S. Vazife-Doost, M. Yaghooti, S. Mehdizadeh, A. Rajaie-Far, Occupational exposure of dentists to electromagnetic fields produced by magnetostrictive cavitrons alters the serum cortisol level, *Journal of natural science, biology, and medicine*, 3 (2012) 60-64.
14. S.M. Mortazavi, E. Daiee, A. Yazdi, K. Khiabani, A. Kavousi, R. Vazirinejad, B. Behnejad, M. Ghasemi, M.B. Mood, Mercury release from dental amalgam restorations after magnetic resonance imaging and following mobile phone use, *Pakistan journal of biological sciences: PJBS*, 11 (2008) 1142-1146.
15. S.M.J. Mortazavi, M. Neghab, S.M.H. Anoshe, N. Bahaeddini, G. Mortazavi, P. Neghab, High-field MRI and Mercury release from dental amalgam fillings, *THEL-JOEM*, 5 (2014) 101-105.
16. S.M.J. Mortazavi, M. Neghab, S.M.H. Anosheh, N. Bahaeddini, G. Mortazavi, P. Neghab, A. Rajaeifard, High-field MRI and Mercury release from dental amalgam fillings, *International Journal of Occupational and Environmental Medicine*, 5 (2014) 101-105.
17. S.H. Shahidi, P. Bronoosh, A.A. Alavi, B. Zamiri, A.R. Sadeghi, M.H. Bagheri, S. Javadpour, Effect of magnetic resonance imaging on microleakage of amalgam restorations: an in vitro study, *Dento maxillo facial radiology*, 38 (2009) 470-474.
18. S. Yilmaz, M. Misirlioglu, The effect of 3 T MRI on microleakage of amalgam restorations, *Dento maxillo facial radiology*, 42 (2013) 20130072.
19. S.M.J. Mortazavi, G. Mortazavi, Effects of X-rays and magnetic resonance imaging on mercury release from dental amalgam into artificial saliva, *Oral Radiol*, (2014) 1-2.