


Response to Commentary: Treating Alzheimer Dementia With CT-Induced Low-Dose Ionizing Radiation: Problematic, Yet Potential for More Precise Inquiry

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In their commentary,¹ Raynor and Giordano make statements that ignore evidence and content of the case report.² They refer to the therapy as a *case study*, misrepresenting the fact that it clearly describes a husband's attempt to save the life of his 81-year-old wife. She was admitted to hospice on April 8, 2015, with advanced Alzheimer dementia (AD), with a life expectancy of less than 6 months. Following the computed tomography (CT) scan treatments, starting on July 23, 2015, the patient recovered sufficiently to be discharged from hospice on November 20, 2015, as determined by her qualified and experienced caregivers and as evaluated by her clinical neuropsychology specialist. The patient has been living in an Alzheimer care home, receiving supplementary treatments, as described in a letter-to-the-editor update.³ More than 2 years after the start of therapy, the patient is alive and continues to age and decline.

The retired husband, a PhD in chemical engineering, asked the author for a potential remedy for his wife (of 57 years), after reading about a study that employed ultrasound energy to restore memory in an AD mouse model. The author gave him an article that he had reviewed on the application of low-dose ionizing radiation (LDIR) to upregulate adaptive protection to control neurodegenerative diseases.⁴ The husband asked how his wife could receive this. The author explained that whole-body or half-body low-dose X-ray therapy had been used successfully on hundreds of patients with cancer to stimulate their immune system.⁵ The husband asked his wife's physician to prescribe this therapy. The physician replied that he could not because it was not an accepted medical treatment. However, they realized that a standard CT scan of the brain is an accepted procedure that could determine anatomical changes and also stimulate neuroprotective systems.

The case report describes the surprising recovery, observed and reported by the patient's caregiver, only 2 days after the treatment (a double scan) on July 23, 2015.² The husband communicated the good news to the author, who advised him to repeat the scans to prolong the stimulation and prevent the patient's adaptive protection systems (>150 genes) from reverting to their previously sluggish state.^{5,6}

To stimulate immunity against cancer, LDIR treatments were given 2 or 3 times per week, for 5 weeks. The husband and physician decided on a much lower frequency to treat AD, 1 CT scan every 2 weeks. Progressive recovery was reported by the caregivers and by the patient's friends and family who had been visiting the patient.² The patient had a major setback after the fourth treatment on October 1, 2015, from which she recovered within weeks. On November 20, 2015, she was discharged from hospice to an Alzheimer care home.²

The author advised that the recovery would be transitory unless "booster" treatments were provided. The update letter describes the ongoing treatments for AD.³ It also reports on the partial recovery of the husband from symptoms of his Parkinson disease (PD). More than 2 years after the initial treatment, the patient is in slow decline. Without the CT scans, it is unlikely that she would have survived past 2015.

Specific Responses to Statements in the Commentary

The commentary states that the case report "posits" that the CT scans ameliorated the AD symptoms.¹ It is well known that nonresponsive patients with advanced AD in hospice do not recover their appetite and responsiveness and are not discharged from hospice to an Alzheimer care home. Increased mobility and other positive changes were observed very soon after each CT scan. These are facts. The authors of the case report,² the caregivers, and the neuropsychologist are not aware of any factor, other than the CT scans, that could have caused

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the observed rapid improvements in the patient's condition. The facts contradict the expected insidious progression in advanced AD symptoms. The case report provided many arguments and references to support the observed stimulation of protective systems. However, the commentary does not discuss them and makes no reference to any of them. It ignores them; it merely questions the idea that LDIR could stimulate adaptive protection systems in the brain.¹

The authors of the commentary criticize the report, stating it is "plagued" with problems and issues. This clearly demonstrates their failure to understand and appreciate the significance of the discovery. They state there is controversy about beneficial effects of LDIR but fail to identify the reason for it. They make no mention of the invalid 1956 recommendation by the U.S. National Academy of Sciences to assess risk of radiation-induced mutations (cancer) using a linear no-threshold model. Are they unaware that this radiation scare was blindly accepted by all of the regulatory organizations? Are they aware that this scandal continues to this day? The unscientific recommendation has been exposed and repeatedly debunked for the past 8 years.⁷ There is an international consensus opinion that it is impossible to observe health effects induced by LDIR exposures, including beneficial effects.⁸ However, 1269 references on radiation-induced biopositive effects have been cited in Luckey's 1980 textbook, and there are 1018 references in his 1991 textbook.^{9,10} Thousands of studies on medical applications of LDIR have been performed since 1896. In spite of the widespread and willful blindness, it is most important to continue publishing evidence of any recovery after LDIR treatments from very serious illnesses, such as cancer, infections (gas gangrene, boils and carbuncles, sinus, inner ear, pertussis, pneumonia), severe wounds, arthritis and other inflammations, asthma, and now AD and PD.

Section 1 of the commentary "Failure to Provide Logical Rationale for the Case Study" ignores the substantial section in the case report "Beneficial Effects of Ionizing Radiation." It outlines 120 years of experience using LDIR treatments and provides a careful biological explanation of the mechanism of action. The therapy provided was not a study; it is a variation of treatments that have been provided successfully by medical practitioners to hundreds of patient with cancer and thousands of patients with other serious diseases. The author suggested this therapy in response to a husband's desperate request for a remedy to treat his dying wife, saying "It won't hurt, and it might help." A partial recovery followed. After discharge from hospice, almost 2 years ago, she continues to live in an Alzheimer care home and benefits from periodic "booster" treatments.³ The commentary mentions the possibility of a risk from this treatment; however, the dose of a CT scan of the brain, even the 80 mGy double scan, is well below the threshold for harm (about 500 mGy). The whole-body X-ray dose fraction employed to stimulate immunity against cancer cells is about 150 mGy,⁵ and the prescribing physician was aware of this fact.

The commentary states, "it is not clear that the initial CT scan actually produced clinically relevant improvement in the

patient's signs and symptoms"; however, the patient's caregiver in the hospice had no doubts about the recovery that she witnessed. It is a fact that the patient was discharged from hospice on November 20, 2015. The case report presents the evidence and it suggests that clinical studies be carried out to develop optimal treatment protocols.²

The commentary points out that artifacts and confounders affect observations. Any clinical studies that follow will be carefully designed to consider and control as much as feasible all conceivable factors that could produce misleading observations.

The commentary mentions statistical evaluation, an established baseline, clinical safety, dose, multiple scans, and so on. The author agrees that these are important design considerations for clinical studies. The case report clearly states that the only treatment option was standard CT scans of the brain. The only variable was the time interval between consecutive scans. In the judgment of the physician and the patient's husband, a 2-week interval was appropriate and cautious. Since there was no prior experience in treating patients with AD with LDIR, the type and amount of benefit that would occur could not be predicted. It would depend on the patient's genetic characteristics and the amount of disease progression. As for statistical uncertainty, approximately 80 ionizing tracks passed through each brain cell during the first double scan of 80 mGy—a 1 mGy X-ray dose represents on average a single ionizing track per cell. Such exposures trigger extensive signaling that activates many of the more than 150 genes of the adaptive protections systems.⁶

The commentary laments on "lack of methodological rigor," ignoring that this therapy was not a study and that the patient was completely nonresponsive. The recovery was first observed and reported by the experienced hospice caregiver. Facts observed by visitors, including the author, were documented in the case report. Additional information on the booster treatments appears in the update³ that was published on February 23rd, which also describes the CT scan treatments that the patient's husband has been receiving to alleviate symptoms of his PD—also a neurodegenerative disease.

The commentary criticizes the therapy provided, stating "a more valid... approach would have been to... justify the administration of subsequent CT scans by attempting quantify such changes—and any/all other effects—with as much methodologic rigor as possible..." This approach is applicable to a study, not for a dying person.

The commentary questions "whether a single case report... justifies... the need for subsequent clinical investigations in the absence of preclinical evidence to provide rationale for possible effects and/or underlying mechanisms." This is a failure to read and understand the scientific information (and the 14 references) provided in the section "Beneficial Effects of Ionizing Radiation." The suggestion to carry out "additional studies in an animal model of Alzheimer dementia..." totally ignores the enormous crisis of dementia now facing humanity and the urgent need for a treatment. Massachusetts Institute of Technology Professor Evans has stated,

“the proper subject for the study of man is man (p. 441).”¹¹ Additional studies on animal models will not provide the information “required to more precisely assess relative and relevant dosimetry . . . outcomes” for humans.

Conclusion

This response to the commentary demonstrates that the criticisms of the therapy described in the case report are invalid and inappropriate. A renowned medical sciences center, specializing in dementia and affiliated with a large hospital, is planning a preliminary study to repeat the therapy described in the case report. This study will be performed in accordance with a protocol approved by the hospital’s ethics board. The author expects the evidence obtained will justify a comprehensive series of clinical studies.

Declaration of Conflicting Interests

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