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Correspondence

Selective history of radioactive iodine in medicine: Inexactitudes no longer

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Dear Editor

In 2010 the primary sources became publically accessible online, unequivocally documenting that Dr. Saul Hertz was wholly responsible for conceiving the idea that radioactive iodine (RAI) could be therapeutic for patients with hyperthyroidism [1]. Hence, Marti et al. were inexact by stating in the May issue of the Journal that "The idea that RAI could be used therapeutically in patients with hyperactive thyroid function was first envisioned by researchers at the Massachusetts Institute of Technology and Massachusetts General Hospital (MGH) in Boston." The authors generously distributed the credit for one of the medicine's pivotal ideas among an impersonal body of researchers at the two large institutions, which constitutes at a minimum inexactness or at the maximum an act of defaming Dr. Saul Hertz who first conceived the idea while working as unpaid faculty at the MGH. The authors cite two dated articles (references #1 and #2), which contain the same defamatory inexactitude that has since been debunked in several recent historical reviews of medical applications of RAI in thyroid diseases [2–4].

Marti et al. also state that "in 1939, Joseph Hamilton and Mayo Soley in Berkeley, California developed iodine-130 and iodine-131", respectively. I am not sure what is implied by the broad meaning of "developed". The authors cite the reference #3 in the article to support this vague statement; however, I found nothing relevant in it to explain what the authors meant by "developed". Since I-131 is the most frequently used therapeutic isotope in contemporary practice, it is important to clarify that I-131 was co-discovered by Glenn T. Seaborg and John Livingood, which is described in detail on the U.S. Department of Energy National Laboratory at the University of California website (http://www2.lbl.gov/Publications/Seaborg/bio.htm).

The authors further state that "RAI later became widely adopted for use in thyroid cancer patients and can be considered the first use of a molecularly 'targeted therapy' for the treatment of cancer". This sentence construction with "molecularly" preceding "targeted therapy" may lead to some confusion. The National Cancer Institute defines "molecularly targeted therapy" as "a type of treatment that uses drugs or other substances to target specific molecules involved in the growth and spread of cancer cells. Blocking these molecules may kill cancer cells or may keep cancer cells from growing or spreading. Molecularly targeted therapy may cause less harm to normal cells and may have fewer side effects than other types of cancer treatment." RAI does not fall into this category. It is the first and the closest to an ideal radiotheranostic (a.k.a. "theranostic" or "theragnostic") radiopharmaceutical. Radiotheranostics is defined as a technique of sequential application of biosimilar or identical diagnostic and therapeutic radiopharmaceuticals. First, the diagnostic radiopharmaceutical is administered for the purpose of qualitative and/or quantitative study of its avidity to the diseased tissue and, at the same time, to determine extent of disease (e.g. tumor staging). When adequate avidity is established, identical or a biosimilar radiopharmaceutical would be administered to deposit radiation energy with the potency informed by the findings on preceding diagnostic study. I-131 is the first and remains the most enduring radiotheranostic agent to date. Under the steadfast clinical guidance of Dr. Saul Hertz the instrument called "Multiscaler" was developed at MIT (he also drafted its manual). This instrument was used diagnostically to determine the RAI uptake in the thyroid and inform the administered activity of therapeutic RAI. This was the first clinical implementation of Radiotheranostics, i.e. the individualized therapy with radioactive isotopes or, as it is more generally known today, the precision medicine.

I urge Marti et al. to recognize their inexactitudes in reply, as well as consider including an apology to the family of Dr. Hertz who endured and defeated defamation attempts.

Conflict of interests statement

The author has no conflicts of interest to report.

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Mark Tulchinsky*
Pennsylvania State University, Milton S. Hershey Medical Center, Hershey, PA, USA

* Pennsylvania State University, Section of Nuclear Medicine, Department of Radiology, 500 University Dr., Hershey, PA, 17033, USA.
E-mail address: Mark.Tulchinsky@Gmail.com.

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