Reply: PSMA-Targeted Therapeutics: A Tale About Law and Economics

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REPLY: I thank Dr. Notni for his recent letter in which he provides his perspective on one part of the success story of PSMA-targeted theranostics. Success stories often come with conflicts and intellectual ownership discussions.

Dr. Notni makes important points. He acknowledges the pivotal role of the inventors of ^{177}Lu-PSMA I&T in shaping the field (1). He also emphasizes our obvious responsibility to honor patent protection. I would like to highlight that both patented and unpatented compounds can be successful and become market drivers. It is important to allow free market forces to compete for business. For instance, one company is currently initiating a phase 3 clinical trial with the nonpatented compound ^{177}Lu-PSMA I&T in patients with castration-resistant prostate cancer (2). As another example, the U.S. Food and Drug Administration recently granted a new-drug application for the non–patent-protected ^{68}Ga-PSMA-11 for a wide range of indications in patients with prostate cancer (3). This development further establishes the high clinical relevance and impact of PSMA-targeted PET imaging in the care of prostate cancer patients (4). Reimbursement will set the stage and prepare the market for several soon-to-be-approved compounds with comparable diagnostic performance. Then the market will decide which ones are most conveniently used clinically. It is thus important to recognize that both patented and nonpatented compounds can address unmet clinical needs, improve patient outcomes, and create significant revenues while following very different business models. I would, however, urge caution regarding exploiting the lack of patent protection for rebranding long-established compounds. Such measures would simply create market and customer confusion.

Theranostics are rapidly growing and have generated substantial interest from industry. Both protected and unprotected compounds will have their place in the clinic and in research. Non–patent-protected compounds could greatly facilitate translational research, addressing (independent of Big Pharma) resistance to PSMA-targeted therapeutics, for instance.

Protected and nonprotected compounds will give rise to larger and smaller companies, all aiming to become fiscally solid despite very different business models.

They all are part of the new nuclear medicine ecosystem, make important contributions to patient care, and will shape the further development of our discipline. We should therefore appropriately appreciate the outstanding contributions that have given nuclear medicine an immense boost over the past 15 years.

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^{18}F-FDG–Avid Axillary Lymph Nodes After COVID-19 Vaccination

TO THE EDITOR: In a recent patient with a left-side parotid malignancy (biopsy-proven mammary analog secretory carcinoma), ^{18}F-FDG PET/CT was obtained during the workup (Fig. 1). The findings showed ^{18}F-FDG avidity in the left axillary lymph nodes with an overall SUV_{max} of 4.5 and an ^{18}F-FDG–avid left supraclavicular lymph node. This result prompted an ultrasound-guided biopsy of the lymph nodes before surgery. Pathologic examination of both subsites revealed lymphocytes consistent with a benign lymph node. Around the time of the biopsy, the patient recalled that she had received the first dose of the Moderna Therapeutics messenger RNA-1273 vaccine 10 d beforehand in her left deltoid. After vaccination, she had injection site soreness and some mild fatigue and general malaise for about 4 h. She then underwent successful superficial parotidectomy, with margin-negative and node-negative resection of the left parotid mammary analog secretory carcinoma.

Shortly after the aforementioned patient was seen, 3 mo post-treatment PET imaging was obtained as part of oncologic surveillance for a patient with a history of oral cavity/oropharyngeal squamous cell carcinoma. On physical examination 3 d before her PET study, laryngoscopy revealed findings concerning for recurrence in the previous surgical bed. Both sides of the neck were palpated, and no lymphadenopathy was appreciated. On PET, the left axillary and left supraclavicular nodes had ^{18}F-FDG avidity, with an SUV_{max} of 5.1. Because of our previous experience with the other patient, this second patient was questioned specifically regarding coronavirus disease 2019 (COVID-19) vaccination. She was able to recall that she had received the first dose of the COVID-19 vaccine 14 d beforehand, though she could not recall the manufacturer. The patient reported minimal symptoms after vaccination and was asymptomatic at the time of the PET scan. She was taken to the operating room for direct laryngoscopy, and biopsy of the concerning area revealed mild dysplasia with no evidence of carcinoma.

^{18}F-FDG uptake is not tumor-specific and can be seen in infection, inflammation, and granulomatous disease (1). Axillary lymph node ^{18}F-FDG avidity has been reported in patients receiving several types of vaccines, including vaccinations to influenza, H1N1, and the human papillomavirus vaccine, but has not been reported in association with the COVID-19 vaccine (2–4). Ultrasound-guided fine-needle aspiration is generally a low-morbidity procedure, though no procedure is without risk. Biopsy of her axillary node could likely have been avoided if the correlation between her recent history of vaccination and her left axillary ^{18}F-FDG–avid lymph nodes had been determined. Limited data on mammary analog secretory carcinoma shows a 5.5% rate of cervical nodal metastasis, but biopsy of a