Reader Updates Guidelines for I-131 and Y-90

In a recent "Clinical Q&A" titled "Handling and Disposal of Monoclonal Antibodies," the author reviewed guidelines for your readers (Estes, 2002).

The manufacturers are not correct in Table 1 on page 290. Zevalin® is manufactured by IDEC Pharmaceuticals Corporation in San Diego, CA. Rituxan® is comarketed by IDEC Pharmaceuticals Corporation and Genentech, Inc., in South San Francisco, CA.

Figure 1 on page 291 suggests radiation precautions for caregivers. The long list of beta precautions in Figure 1 is more appropriate for unconjugated I-131. Pure beta emitters like Y-90 pose less radiation exposure risk to healthcare workers and family members than mixed beta and gamma emitters such as I-131.

Wagner et al. (2002) described less extensive patient release instructions for pure beta emitter Y-90 when chelated in the radioimmunotherapy Zevalin. The guidelines are as follows.

For three days after treatment with Y-90 ibritumomab tiuxetan,

- Clean up spilled urine and dispose of any body fluid-contaminated materials to prevent exposure to others (e.g., flush it down the toilet or place it in a plastic bag in the household trash).
- Wash hands thoroughly with soap and water after using the toilet.

For one week after treatment with Y-90 ibritumomab tiuxetan,

- Use condoms for sexual relations.

The radiation exposure to family members of patients receiving Zevalin has been studied (Wiseman, Leigh, Witzig, Gansen, & White, 2001). These Zevalin-treated patients were not restricted in their interactions with family members. Personal electronic dosimeters were worn by family members for a week after Y-90 Zevalin therapy. The median deep dose equivalent for family members was 0.035 mSv (range: 0.014–0.079 mSv) during the one-week period. This low level of radiation exposure is in the range of normal background radiation. The authors concluded that patients' interactions with family members need not be restricted because radiation exposure from the pure beta emitter Y-90 Zevalin was on the order of normal background radiation.

This low risk of significant radiation exposure to healthcare workers, family, and the public from a pure beta emitter can be contrasted to that of the mixed beta and gamma emissions of I-131. Estes appropriately noted in Figure 1 that it is important to stay at least six feet away from patients whenever possible. I-131 has been used to treat hyperthyroidism and thyroid cancer for 40–50 years. For most of that time, patients receiving 30 mCi or more of I-131 were hospitalized because of the radiation exposure to family members and visitors as a result of its energetic gamma emission that can pass long distances. In the past few years, the rules governing the release of radioactive patients have been revised to permit earlier discharge of these patients if the healthcare providers can ensure no contacts of the patients will receive more than 500 mrem of radiation exposure (Siegel, 1998).

Peter C. Pieslor, MD, MBA
Nuclear Medicine Physician
Associate Director
IDEC Pharmaceuticals Corporation
San Diego, CA
ppieslor@idecpharm.com

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Lisa Schulmeister, RN, MN, CS, OCN®
P.O. Box 23868
New Orleans, LA 70183
CJONeditor@hotmail.com