

Determining the breast-feeding interruption schedule after administration of ^{123}I -iodide

Seiichiro MORITA,* Noriyoshi UMEZAKI,** Masatoshi ISHIBASHI,* Seiji KAWAMURA,***
Chizuko INADA**** and Naofumi HAYABUCHI*

**Department of Radiology, **Radioisotope Institute for Basic and Clinical Medicine
and ***Center for Diagnostic Imaging, Kurume University Hospital
****Fourth Department of Medicine, Kurume University School of Medicine*

Radioactivity after administration of ^{123}I -sodium iodide was measured in breast milk samples obtained from a patient with postpartum thyroiditis. The breast milk was collected over 93 h during the infant's regular feeding times. The radioactivity in the breast milk was calculated with a ^{123}I capsule of the same lot number as the standard source. ^{123}I was excreted exponentially with an effective half-life of 5.5 h; 2.5% of the total radioactivity administered was excreted in the breast milk over the 93 h, 95% of which was excreted within the first 24 h, and 98.2% within 36 h.

The first milk sample collected at 7 h after administration of the radiopharmaceutical contained 48.5% of the total radioactivity excreted. We estimated the potential absorption of radioactivity to an infant's thyroid in uninterrupted breast-feeding to be 30.3 mGy. With a 24-hour interruption, the absorbed radioactivity would be 1.25 mGy; with a 36-hour interruption, it would be 0.24 mGy.

According to our calculations, breast feeding should be curtailed for 36 h to reduce the infant's exposure to ^{123}I radioactivity. By using a correction factor based on maximum radioactivity from another ^{123}I capsule of the same lot, we were able to ascertain the appropriate protocol for our patient and establish a measurement method that can be applied in similar clinical situations.

Key words: ^{123}I -sodium iodide, breast-feeding, calculation method, thyroid uptake, radiation exposure