FIGURE 1
Blood pool image showing patchy uterine activity with focal area of hyperemia to right of midline

subsequent blood-pool images. The blood-pool images were positive in all cases, including four women who had amenorrhea for 2–7 mo. None of the four women was pregnant at the time of the study. One woman was taking tamoxifen. Of the remaining 23 women, two were taking estrogen. The intensity of uterine activity was variable and did not correlate with time of menstruation. Activity was not always discrete and midline (Fig. 1).

Clinicians should be familiar with the varied patterns of the uterine blush on the early phases of the bone scan to prevent confusion with soft tissue inflammation and inflammatory bone disease.

Reference

1. Mandell GA, Harcke HT, Sharkey C, et al: Uterine blush in multiphase bone imaging. *J Nucl Med* 27:51–55, 1986

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REPLY: We appreciate the opportunity to comment upon the additional observations on uterine blush proffered in the letter to the editor by Segall and Gurevich. Their blood-pool images demonstrated characteristic supravesical activity in all menstruating women in their population with a mean age of 29.8 yr. Our population, mean of 20.1 yr, exhibited similar findings. The discordant blood flow and blood-pool images they describe in six instances could possibly be related to their technique. Our blood flow images were acquired as 24 5-sec images vs. their 15 3-sec images. The lack of recognition of the uterus on the blood flow images in some of their patients could be attributed to the variation in statistics. Our images lasted longer (5 sec vs. 3 sec) and duration of blood flow segment of the study was greater (120 sec vs. 45 sec).

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Dosimetry for Cystic-Type Tumors

TO THE EDITOR: Taasan et al. have presented data which further illustrates the possibilities for radiopharmaceutical treatment of cystic type tumors (*1*). However, as in most cases previously reported, there appear to be some fundamental considerations which should be more completely addressed in order to deliver appropriate therapy. It would appear obvious that, in order to evaluate the effects of therapy to the cyst itself, the effect must be related to the dose delivered to the cyst wall. In Taasan et al. the radiation dose strived for is the dose to the inner surface of the cyst wall, which they give as 20,000 rad [as calculated by a formula given by Loevinger (*2*)]. In order for the dose to the inner surface of the cyst to be meaningful, though, one must assume that the energy of the beta emissions is completely absorbed in the wall. We have shown that a more meaningful descriptor of the dose relationship is the dose as a function of depth in the wall (*3*, *4*), since there may be significant penetration of the beta particle outside the wall where it is thin (3mm in certain cystic tumors). The dose delivered is also very dependent upon the distribution of the radioactivity inside the cyst. We have noted, as have others previously (*5*,*6*), that after a short time most of the radiocolloid apparently tends to be "plated out" onto the inner surface of the cyst. Thus, rather than making the assumption of a uniform distribution inside the cyst fluid, the more appropriate geometrical configuration of activity for dosimetry purposes is the spherical shell geometry. With regard to the calculated dose to be delivered, we feel that the expected dose should be computed at distances through the wall, and some points beyond the wall if necessary, until the range of the beta particle is reached. The endpoint consideration should thus include both cyst wall dose as well as the surrounding tissue dose. The cyst wall thickness can be determined with modern imaging techniques (computed tomography or nuclear magnetic resonance).

The need for preciseness in the delivery of the dose has been demonstrated by reports of possible partial visual impairment (*7–9*) resulting from intracystic radioactive sources which can occur because of the frequent close proximity of the optic nerve of the adjacent cyst wall.

Equations and graphs to compute the desired dose as a function of distance in the cyst wall have been described in our recent articles (*3*,*4*). The spherical shell model given for phosphorus-32 (*4*) gives similar results to the infinite plane model originally proposed (*3*).