REPLY: Dr. Komiyama has commented that it is not necessary to understand the risk associated with childbirth during brain SPECT for moyamoya disease, because patients have never complained of neurological symptoms.

We examined the relationship between complications of childbirth and neurological symptoms by reviewing our patients with moyamoya disease who had undergone surgery over the past 20 y. A preliminary analysis revealed that only 1 of 11 patients had a difficult delivery. They may or may not have had neurological symptoms associated with moyamoya disease. A study from the perspective of neurological surgery will be completed next year.

Although we feel that Dr. Komiyama's opinion may be correct, it is necessary to prove that abnormalities in cerebral blood flow (CBF) are not induced during childbirth. This is particularly true for natural delivery, because obstetricians in Japan recommend cesarean delivery rather than natural delivery to avoid complications during childbirth.

Brain SPECT should be performed during rehearsals of natural delivery using a minimal dose of technetium to show that CBF does not change. The results of this procedure should help convince obstetricians to opt for natural childbirth in patients with moyamoya disease.

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Retreatment of Graves' Disease with Radioiodine ^{131}I

TO THE EDITOR: Leslie et al. (*1*) reported their experience with retreatment of Graves' disease with similar deposited doses of radioiodine ^{131}I. They found that 15.6% of their patients required a second dose, and there was no significant difference between the percentage of patients who remained hyperthyroid after either dose. In an important paper published in the *Journal* in 1971, not referenced by Leslie et al., Spencer (*2*) examined the outcomes in three large clinical series in which multiple doses (4–9) were administered, each dose yielding the same ^{131}I concentration per gram of thyroid. When the percentage uncured (i.e., still hyperthyroid) was plotted against number of doses on semilog paper, the data in each series fell in a straight line, indicating that the fraction of patients who remain hyperthyroid is constant for a given deposited dose.

In Figure 1, I have replotted the data of two of these series (*3,4*) and have added a third (*5*) from a more accessible publication. In each series, the same ^{131}I concentration was deposited at successive dosings, which in one series was carried out to 11 dose administrations. Spencer (*2*) concluded that the uncured fraction with any dose could be described by $H = H_0e^{-\lambda D}$, where H is the number of patients not cured after any dose, H_0 is the original number of patients, λ is a constant describing the fractional cure rate per dose and D is the number of doses administered.

For Silver's series (*4*) (Fig. 1), 50% of patients (H/H_0) were still hyperthyroid after one dose, so that $\lambda = 0.693$, i.e., about 31% of patients were always uncured after every dose of this size (80 μCi/g). It is therefore not surprising that Leslie et al. (*1*) had the same failure rate after both dosings.

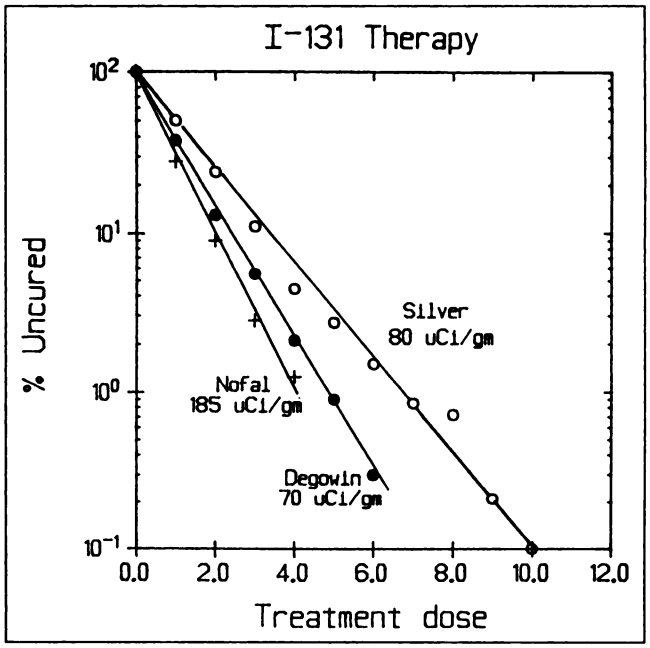

FIGURE 1. Response of hyperthyroid patients to repeated treatment with sodium iodide ^{131}I in same tissue concentrations. Vertical axis = percentage uncured (i.e., still hyperthyroid); horizontal axis = number of doses administered.

It appears that λ is greatest for the highest ^{131}I concentration (Fig. 1). To get a better feel for this relationship, I have plotted the mean success rate for each of 12 series in which a constant ^{131}I concentration was used (Fig. 2). The mean success rate is the same as the success rate for each dose. There is a strong linear relationship, $y = 0.0018x + 0.48$, with a correlation coefficient (r)

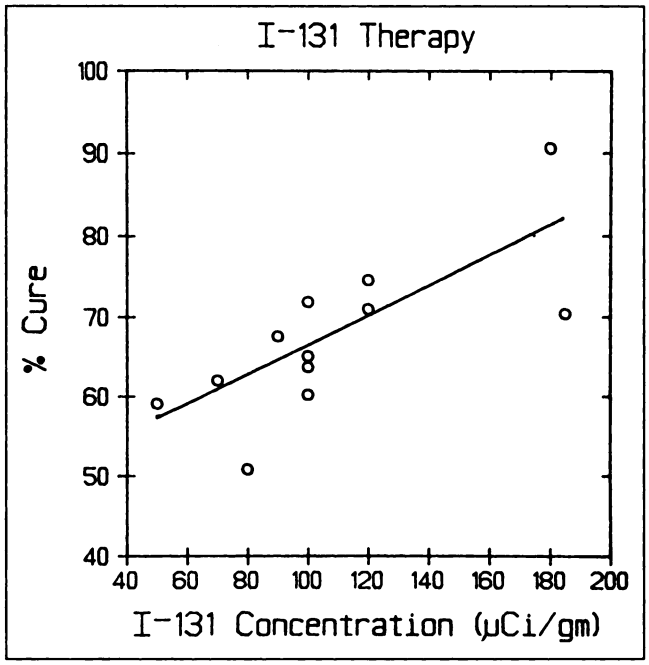

FIGURE 2. Percentage of patients cured of hyperthyroidism by treatment with sodium iodide ^{131}I at a given tissue concentration, in 12 published series. Vertical axis = percent of patients cured; horizontal axis = ^{131}I tissue concentration.