Is There a Pool of Neuroblasts?

To the Editor:

I read with interest the article by Schäbitz et al1 which examines the poststroke effects of brain derived neurotrophic factor on sensorymotor recovery and neurogenesis. However, I have several concerns.

The authors have studied new neuron production after injection of brain-derived neurotrophic factor (BDNF) and labeling newly produced cells by bromodeoxyuridine (BrdU) injection in experimental stroke model.1

BrdU is a thymine analog which is recently the most frequently used molecule to label newly produced cells.2 Because the half-life of BrdU in the plasma is approximately 0.5 hours,3 simultaneous daily injections are required for long-term studies. Schäbitz et al have performed single injection 4 hours after the formation of stroke to label the dividing cells. Because the onset of neuroprogenitor cell division in response to stroke is unknown, I think that a single injection of BrdU should not be adequate and this could explain why no or infrequent BrdU/Neun positive cells are observed in the analysis. Also, if some BrdU/Neun positive cells were observed then the researchers should also have observed BrdU/Doublecortin positive cells, but no data about the latter have been given in the article.

When all the issues about BrdU-labeling are ignored, a hypothesis can be suggested. Neurons are produced by the maturation of neuroblasts, and the neuroblasts are produced by the mitosis of neuroprogenitors. BrdU existence in the microenvironment of neuroprogenitor cells should cause the newly formed neuroblasts by the mitosis of neuroprogenitors to be BrdU positive. Because the doublecortin positive cells in this study are not positively labeled for BrdU, then these cells were present before stroke, and thus it can be hypothesized that a pool of doublecortin positive cells reside within the brain to migrate and mature as a response to neuronal loss.

Disclosures

None.

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