The continued presence of stem cells and oogonia in the adult mammalian ovary

Sir,

We would like to comment on a recently published article (Byskov et al., 2011) that contradicts presence of germ stem cells or oogonia in the post-natal human ovary after the final clearing of these cells during the first 1 or 2 years of life.

Presence of stem cells in adult ovary is a controversial area of research and needs to be resolved by the reproductive biologists. We have previously published data that choice of fixative and antigen retrieval protocols are crucial to detect Oct-4 positive cells in testicular tissues (Bhartiya et al., 2010). Similarly, Oosterhuis et al. (2011) have also recently reported that Oct-4 is an extremely sensitive and specific marker for human malignant germ cell tumors but may give false-negative in biopsies fixed in Bouin’s or Steive’s fixative. We consider that these may provide reasons that germ stem cells or oogonia might have been missed in the post-natal Bouin’s fixed human ovary by Byskov et al.

We request the group to refer to our recent publication (Parte et al., 2011) wherein we report that a gentle scraping of adult human, sheep, monkey and rabbit ovary surface releases stem cells in medium which can be characterized for various pluripotent markers by immunolocalization studies or by reverse transcription polymerase chain reaction. We continue to assert that stem cells do exist in adult ovaries and persist after menopause sets in.

References


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Reply: The continued presence of stem cells and oogonia in the adult mammalian ovary

Sir,

In their letter, Bhartiya et al. (2011) requests us to refer to their article (Parte et al., 2010). This was not possible since this article was published after the submission of our publication (Byskov et al., 2011). However, we agree that their article would have been relevant to discuss although their study is mainly concerned with the presence of embryonic stem cells in cultured human ovarian surface epithelium (OSE), and not with their putative presence in situ in the ovary. However, we referred to the article by Virant-Klun et al. (2008), which also deals with putative stem cells from cultured OSE cells.

Dr Bhartiya also questions the use of Bouin’s fixative and OCT4 staining and refers to Oosterhuis et al. (2011). Although we agree about the relevance of this paper that describes the problem of using Bouin or Steive’s fixatives for detection of OCT4, we believe that our controls for OCT4 are quite satisfactory and because the OCT4-positive cells are also stained for SSEA4 and MAGE-A4 as well as for C-KIT (oogonia).

As mentioned in our paper, we question the functional relevance in vivo of the embryonic-like germ stem cells in ‘cultured cell lines from gonads or other organs’. Several studies have found that during culture various cell lines have the ability to form functional germ cells. However, there are still no evidence that ‘neo-oogenesis’ occurs within the ovary itself.

References


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