

To the Editors:

Intra-amniotic injection or intra-uterine injection of methylene blue? (1)

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I agree with Sirisena and Lanerolle who in their article "A cautionary tale: intra-amniotic injection of methylene blue" (*CMJ* 2000; **45**: 44-45) make a very important point: elective interventions in the second half of the menstrual cycle must be undertaken with caution.

They claim that an inadvertent intra-amniotic injection of methylene blue dye occurred in an embryo on the 23rd day after menstruation. The embryo at this point is a blastocyst of about 10 days. It is at this stage deeply embedded in the endometrium, and its amniotic cavity is a microscopic slit (1). Embedding of the embryo endometrium, which begins on the 6th day is completed by the 11th day, with the penetration gap being completely covered by endometrial cells (1). The amniotic cavity appears about the 7th day as a narrow slit, and remains so over the next few days (1).

In the case reported, therefore, it is more logical to conclude that methylene blue dye entered the uterine cavity, and flowed over the endometrium, without any direct contact whatsoever with the embryo. It was an intrauterine injection, more in keeping with the statement in the last paragraph of the article. Fetal exposure to the dye in such a case would be much less than with intra-amniotic or intravenous injection of methylene blue. The complications quoted in the article refer to direct intra-amniotic injection, with no relevance to the case reported. In fact, teratogenic

effects produced by exposure of the blastocyst differs significantly from those due to exposure during organogenesis and in later pregnancy (2).

Another important issue in this article is the statement that diagnostic laparotomy is commonly performed in the investigation of infertility. This is a practice that is (fortunately) rapidly diminishing even in Sri Lanka due to greater use of laparoscopy. Lesser postoperative morbidity, better access to the pelvis and the facility of magnification makes diagnostic laparoscopy far superior to, and more elegant than, diagnostic laparotomy. In today's context, the latter must be abandoned, and even condemned, as a routine investigation of infertility.

To conclude, intra-amniotic injection is impossible in a blastocyst of 10 days, and the title of the article is misleading. The complications mentioned bear little relevance to exposure of this fetus. Exploratory laparotomy as a routine investigation in infertility is a thing of the past.

References

1. Sadler TW. *Langman's Medical Embryology*. Baltimore: Williams and Wilkins; 1985: 39-44.
2. Rutledge JC. Developmental toxicity induced during early stages of mammalian embryogenesis. *Mutation Research* 1997; **396**: 113-27.

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