Letters to the Editor

Increased male proportion in fetal deaths and in fetuses with congenital malformations in Greece

Sir,
We have read with great interest the well-designed study by Alexopoulos and Alamanos (2007) and we would like to comment on the potential relationship between the decline of sex ratio at birth and the increased male proportion in fetal deaths and in fetuses with congenital malformations in Greece. In this recent article, the above authors state that between 1956–1985 (male proportion 0.5172) and 1986–2005 (male proportion 0.5158) there is a trend of decline in the secondary sex ratio in Greece. This difference reached a statistically significant level ($P = 0.013$). Similar trends have been recorded in the last decades in various industrialized countries (Parazzini et al., 1998; Davis et al., 2007). It is increasingly clear that exposure to foreign substances in either parent before conception can have a broad range of teratogenic effects, including reproductive failure, structural or functional defects or altered expression of sex at birth. Psychological distress has been also implicated to affect the offspring sex ratio (Catalano et al., 2005; Obel et al., 2007).

In support to the findings of Alexopoulos and Alamanos (2007), we have found an increased male proportion in fetal deaths and in fetuses with birth defects. More specifically, during the period 2002–2007, we have performed 134 fetal autopsies in total. Eighty-three of them were autopsies of spontaneous abortions (SA), whereas the remaining 51 were fetuses from pregnancies terminated due to birth defects detected in the prenatal screening. The proportion of male fetuses in total was 0.6562. Forty-five out of 134 fetuses presented intrauterine growth retardation; among them the proportion of males was 0.7560. In the SA group, the proportion of male fetuses was 0.6153. Finally, among the 56 fetuses that presented congenital malformations, the proportion of males was 0.6727. Similar findings have been recently reported in series from USA and Japan and have been attributed to greater prenatal vulnerability of the male fetus, especially at the earlier stages of gestation (Mizuno, 2000; Davis et al., 2007).

In addition, Alexopoulos and Alamanos suggested that the trend toward a decrease in secondary sex ratio observed in Greece may be accounted for by a decrease in male births associated with specific workplace exposures of the father. Although this might certainly be the case for specific occupational categories, it is noteworthy that our series of autopsies comes from a private institution in Northern Greece (Euromedica General Clinic), where generally either middle or upper class women attend in order to deliver. This means that besides certain occupational hazards, other general environmental as well as psychological factors may be implicated in the increased male proportion in fetal deaths and in fetuses with birth defects, and the corresponding decline in secondary sex ratio in Greece.

References

Dimosthenis Miliaras1,2,3, Soutiana Meditskou1,2 and Maria Ketikidou2
1Laboratory of Histology and Embryology, Medical School, Aristotle University, Thessaloniki, Greece and 2Department of Pathology, Euromedica General Clinic, Thessaloniki, Greece
3Correspondence address: E-mail: dmiliara@med.auth.gr
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Sir,
I would like to thank Dr Miliaras and his colleagues for their interest in our study. Their descriptive data, support the greater vulnerability of the male fetus, a finding which has been increasingly reported (Ingemarsson, 2003; Di Renzo et al., 2007) even though its biological basis remains largely

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