Pregnancy in a woman requiring long-term dialysis receiving recombinant human erythropoietin have been reported, and to date there is no consensus for the use of recombinant human erythropoietin in pregnancy. Although detrimental effects of recombinant human erythropoietin in pregnancy cannot be suggested in our case, its use has not improved outcome of pregnancy and a note of caution must be underlined on its current use, because transfer of erythropoietin from mother to fetus has been demonstrated in mice.

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REFERENCES

Effects of maternal inhalation of 40% oxygen on fetal oxygen saturation
To the Editors: In the paper by Dildy et al. (Dildy CA, Clark SL, Loncke CA. Intrapartum fetal pulse oximetry: the effects of maternal hyperoxia on fetal arterial oxygen saturation. Am J Obstet Gynecol 1994;171:120-4) the authors found a significant increase in fetal arterial oxygen saturation (SpO2) after giving 100% oxygen to the mother during labor but did not find a change in fetal oxygen saturation at a maternal inspired oxygen concentration (FiO2) of 40%. The authors therefore question the efficacy of maternal oxygen therapy in which inspired oxygen concentrations are primarily <40%.
With the authors' data concerning the short-term administration of 40% and 100% oxygen, we plotted the fetal \( \text{SpO}_2 \) increase against the initial fetal \( \text{SpO}_2 \) (Fig. 1). The Spearman rank correlation coefficient \( (r_s) \) is -0.84 at 40% and \( r_s = -0.85 \) at 100% \( \text{FiO}_2 \), which is statistically significant at both \( \text{FiO}_2 \) concentrations \( (p \text{ value } 0.005 \text{ and } 0.004, \text{ respectively}) \). From the data points and a linear regression fit (see Fig. 1) it appears that when the initial fetal \( \text{SpO}_2 \) is around 40%, then the \( \text{SpO}_2 \) increase is 15%, at both 40% and 100% \( \text{FiO}_2 \). At a higher initial fetal \( \text{SpO}_2 \) level (>50%) no benefit is seen from 40% \( \text{FiO}_2 \), but 100% \( \text{FiO}_2 \) still has some effect on fetal \( \text{SpO}_2 \). The regression line crosses the \( x \) axis at 58% for 40% \( \text{FiO}_2 \) and at 73% for 100% \( \text{FiO}_2 \) so that there is a shift to the right with increasing maternal \( \text{FiO}_2 \).

A similar analysis applied to the authors' data on long-term (45 minutes) maternal oxygen inhalation of 40% oxygen does not show a significant correlation between initial value and increase of fetal \( \text{SpO}_2 \). This can partly be explained by the somewhat higher mean initial fetal \( \text{SpO}_2 \) in the long-term administration group compared with the short-term administration group (58% vs 50%). Other clinical characteristics of the two groups studied, for instance, different fetal heart rate patterns, might be other reasons for this observation.

Two animal studies\(^1\) on the assessment of the accuracy of fetal reflection pulse oximetry report a precision of 5.5% to 6.6% at low saturation values. It is encouraging that the results of the study of Dildy et al. in human fetuses show some fairly good correlations and that fetal reflectance pulse oximetry is apparently a tool suitable for human physiologic studies.

The data of Dildy et al. suggest to us that maternal oxygen administration with both high (100%) and moderate (40%) oxygen concentrations is beneficial to those fetuses who are near a critical oxygen saturation range.\(^2\) Further studies using this new technique are warranted. For the analysis of the effects of maternal hyperoxia on fetal arterial oxygen saturation, the initial fetal \( \text{SpO}_2 \) should be taken into account.

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REFERENCES


Reply

To the Editors: We appreciate the interest that was shown by van den Berg and Jongsma in our recent publication regarding the effects of maternal \( \text{FiO}_2 \) on fetal \( \text{SpO}_2 \) measured by reflectance pulse oximetry.

In our original article, repeated-measures analysis of variance was used to evaluate the short-term effects (group I, 20-minute duration, \( \text{FiO}_2 \) 21%, 40%, and 100%) and long-term effects (group II, 45-minute duration, \( \text{FiO}_2 \) 21% and 40%) of supplemental maternal oxygen administration on fetal \( \text{SpO}_2 \) in normal laboring women. According to van den Berg and Jongsma additional statistical analyses of the data reveal further observations and conclusions.

A matched \( t \) test was used to compare means of subgroups, with a two-tailed \( p < 0.05 \) considered significant. Spearman regression-correlation analysis was used to determine relationships between the initial fetal \( \text{SpO}_2 \) before oxygen therapy and percent change in fetal \( \text{SpO}_2 \) [(Initial \( \text{SpO}_2 \) – Final \( \text{SpO}_2 \)) + Initial \( \text{SpO}_2 \) × 100] after therapy in treatment subgroups, with