

## Antenatal Diagnosis of Surgically Correctable Anomalies: Effects of Repeated Consultations on Parental Anxiety

L. Aite, Psychologist

A. Trucchi, MD

A. Nahom, MD

A. Zaccara, MD

E. La Sala, MS

P. Bagolan, MD

### OBJECTIVE:

To assess whether or not a correlation exists between antenatal consultations and parental anxiety.

### STUDY DESIGN:

In total, 31 couples undergoing prenatal consultation after a diagnosis of a surgically correctable anomaly were asked to fill in a questionnaire (Spielberger State-Trait Anxiety Inventory) measuring anxiety levels (AL) both after the first consultation and at birth. Prenatal counselling was done by a perinatal team including paediatric surgeon, obstetrician, and psychologist.

### RESULTS:

Malformations were: eight diaphragmatic hernias, 10 intestinal atresias, four abdominal masses, nine abdominal wall defects. Each fetus was subsequently followed up at regular intervals from diagnosis to birth. AL at birth were then compared with the number of antenatal consultations. A negative correlation ( $r = -0.688$ ,  $p < 0.001$ ) was found between the number of consultations and the level of anxiety at birth. Patients having at least two consultations had significantly lower anxiety levels at birth.

### CONCLUSION:

Irrespective of the type of malformation, there is evidence that having more than one antenatal consultation may significantly reduce AL at birth. Therefore, early antenatal diagnosis should be encouraged in order to increase as much as possible chances of repeated consultations for the prospective parents.

*Journal of Perinatology* (2003) **23**, 652–654. doi:10.1038/sj.jp.7210992

### INTRODUCTION

An increasing number of newborns have a diagnosis of a congenital malformation made before birth. Therefore, whenever an obstetrician identifies a fetal anomaly, an antenatal consultation is offered to the couple. The aims of such consultation are multiple since it may provide information about: (1) outcome and quality of life, (2) possible interventions, (3) appropriate setting, time and route of delivery, and (4) expected hospital course. Not infrequently, repeated encounters with the couple are required in order to address all these issues.

The influence of prenatal surgical consultations on perinatal mortality and management<sup>1</sup> as well as the psychological effect of parental antenatal counselling has been widely investigated.<sup>2,3</sup> However, whether or not the number of antenatal consultations might affect parental anxiety at birth has not been elucidated so far.

### MATERIALS AND METHODS

In the period from September 1999 to October 2001, all couples undergoing prenatal consultation following diagnosis of a congenital anomaly in their prospective child were asked to participate in a psychological study.

Antenatal counselling was done in a multidisciplinary manner, at a tertiary-level referral center, with the joint presence of obstetrician/sonologist, pediatric surgeon and psychologist. Only fetuses with surgically correctable anomalies in which correction could be anticipated at birth were included in this study.

All consultations took place at the same time with a sonogram: after diagnosis, each couple was followed by regular meetings, at intervals ranging from 14 to 21 days until birth, by the same team who had given the first consultation. Thus, the number of consultations was determined solely on the basis of the gestational age at diagnosis. Inclusion criteria were the following: (1) diagnosed malformation confirmed at birth; (2) birth after the 34 weeks of gestation; (3) first mother – newborn contact in the Unit taking place within the first week of life and (4) no chromosomal anomalies.

Anxiety levels were measured using the Spielberger State-Trait Anxiety Inventory (STAI).<sup>4</sup> This method of scoring anxiety was designed to be self-administered. The questionnaire is set in two parts: the STAI-S score, which gives the level of state anxiety at the time of completing the text and the STAI-T score, which measures

Newborn Surgery Unit, Bambino Gesù Children Hospital, Rome, Italy.

Presented at the Annual Meeting of the Section of Perinatal Pediatrics, American Academy of Pediatrics National Conference and Exhibition, Boston, MA, October 2002.

Address correspondence and reprint requests to Pietro Bagolan, MD, Newborn Surgery Unit, Bambino Gesù Children Hospital, P.zza S. Onofrio, 4 00165 Rome, Italy.

the inherent Trait anxiety level of the subject. In both parts, scores vary from a minimum of 20 to a maximum of 80. Each member of the couple was asked to complete the questionnaire after the first consultation and at birth. Questionnaires were then collected and retrospectively reviewed.

The Spearman correlation coefficient was used to assess correlation between the questionnaire scores at birth and the number of antenatal consultations. A partial correlation coefficient was used to measure correlation between the effect of interval diagnosis/birth over the number of consultations and STAI-S scores. A full factorial two-way analysis of variance was used to assess if the number of consultations and/or type of anomaly have a significant effect on anxiety. The Scheffé post hoc test was used to determine if there were statistically significant differences in mean anxiety levels in couples receiving one or more than one consultation.

## RESULTS

In all, 80 couples received antenatal consultations in the considered period; 51 met the inclusion criteria and were asked to participate. A total of 31 couples agreed to enter the study and gave their informed consent.

Mean age of mothers was  $29.69 \pm 5.17$  years and mean age of fathers was  $31.85 \pm 4.86$  years; educational level ranged from university to high school in both gender.

Details about malformations, number of consultations, STAI-T and STAI-S scores are given in Table 1. The considered groups of malformations were not statistically different with regard to the number of antenatal consultations ( $p = 0.143$ ) and scores. Specifically, there were no statistically significant differences in STAI-T scores ( $p = 0.375$ ) or in STAI-S score, both at diagnosis ( $p = 0.501$ ) and at birth ( $p = 0.065$ ). On the contrary, a significant difference ( $p = 0.004$ ) was found with regard to gestational age at first consultation.

A negative correlation was found between the number of antenatal consultations and the level of anxiety at birth ( $r = -0.670$ ,  $p = 0.001$ ) (Table 2). The partial correlation coefficient controlling for time was  $-0.666$ . Regarding the number of consultations, the ANOVA model showed a significant decrease in the means of anxiety level ( $p < 0.005$ ), while the type of anomaly

did not showed such behaviour ( $p > 0.05$ ). Also, the interaction between these two factors (type of anomaly and number of consultations) showed to be not significant. With the Scheffé test, a statistically significant difference in anxiety levels was seen in couples receiving one consultation versus those receiving two or more ( $p = 0.004$ ).

## SIGNIFICANCE

Prenatal diagnosis of congenital malformations has prompted several papers where ethical and psychological aspects appear to play a more significant role.<sup>5-9</sup>

In this respect, many authors<sup>10-12</sup> concur that appropriate counselling by a team of specialists, comprising the sonologist, the obstetrician, the paediatric surgeon and the psychologist can significantly affect parental psychological reactions.

Nowadays, most of the prospective parents may receive the diagnosis of fetal malformation and, therefore, the counselling as early as the 20th week of gestational age.

This raises the question of whether or not repeated consultations throughout the pregnancy might affect anxiety levels in the prospective parents at birth.

To test such an anxiety in each couple of our study population, we delivered the STAI questionnaire.

As previously mentioned, there was no statistically significant difference in STAI-T score in the couples returning the questionnaire: this score showed superimposable results to that of Italian population making our sample representative of a normal population. Generally speaking, in our series the diagnosis of congenital malformation was associated with extremely high levels of parental anxiety.

**Table 2**

No. of consultations	No. of couples	Mean STAI-S score at birth
1	12	$71.25 \pm 6.34$
2	4	$58.25 \pm 6.88$
3	9	$57.56 \pm 9.82$
4	6	$61.33 \pm 5.69$

**Table 1** Relationships between malformations, STAI score and age at diagnosis

	Diaphragmatic hernias	Abdominal wall defects	Intestinal atresias	Abdominal masses	<i>p</i> -Value
No. of cases	8	9	10	4	
Mean gestational age at diagnosis	$27.20 \pm 5.19$	$24.00 \pm 1.94$	$28.60 \pm 5.07$	$25.25 \pm 4.43$	0.004
Mean number of consultations	$2.50 \pm 1.39$	$2.00 \pm 1.61$	$1.60 \pm 1.31$	$2.75 \pm 0.46$	0.143
Mean STAI-S at diagnosis	$74.14 \pm 9.10$	$73.42 \pm 6.56$	$76.29 \pm 3.54$	$72.25 \pm 6.23$	0.541
Mean STAI-T	$31.50 \pm 5.06$	$32.44 \pm 4.25$	$33.55 \pm 4.70$	$34.63 \pm 4.25$	0.375
Mean STAI-S at birth	$65.06 \pm 11.54$	$65.83 \pm 11.03$	$67.95 \pm 8.09$	$56.25 \pm 10.51$	0.065

Moreover, no statistically significant difference was found among the considered groups of congenital malformations at the time of diagnosis also with regard to STAI-S score; in other words, anxiety levels, both at initial diagnosis and at birth, were independent of the severity of the anomaly itself. As Drotar<sup>13</sup> pointed out, this finding could reflect a “shock” state, which has been described when communicating a diagnosis of a congenital malformation at birth. Despite the severity of the anomaly, communication is stressful and emotionally demanding and can be considered, as pointed out by Detraux,<sup>14</sup> a crisis in the life of prospective parents.

The problem of anxiety induced by antenatal counselling has received much attention in the literature: however, there is no agreement among the authors with regard to the optimal approach.<sup>15–17</sup>

Marteau<sup>18</sup> and Marteau et al.<sup>19</sup> suggested that immediate and long-term distress due to a positive result on a routine screening test may be achieved by appropriate preparation before undergoing the test and by provision of information, counselling and support post-test.

Harding et al.,<sup>20</sup> in a study about mothers undergoing prenatal consultation for minimal hydronephrosis, found that follow-up is an unnecessary cause of concern for parents when such minimal hydronephrosis is diagnosed in the fetus. While for such benign conditions we are in agreement with this view, few data exist about repeated ultrasound and counselling for more serious anomalies like those of our series.

The most striking result of our study was the negative correlation between the number of antenatal consultations and the level of anxiety at birth. As shown in Table 2, the major source of the difference in anxiety levels lies in the difference between couples receiving one consultation and those receiving more than one. In this respect, the small sample of couples receiving three or four consultations did not allow us to make conclusions regarding the optimal number of consultations. In this study, the only demonstrable cutoff point was having at least two consultations. Moreover, we were concerned about the influence of time over the reduction of anxiety, especially in those cases where the diagnosis was made very early in gestation. However, the partial correlation coefficient controlling for time seems to indicate that the interval of time between diagnosis and birth does not play a role in reducing parental anxiety levels at birth.

## CONCLUSION

Prospective parents may be able to cope with anxiety if properly supported; there is no linear correlation between the severity of the anomaly and the extent of parents' anxiety and a single consultation is likely to be inadequate. However, the exact number of antenatal consultations which might be beneficial in terms of parental anxiety at birth, remains to be clarified.

## References

1. Crombleholme TM, D'Alton M, Cendron M, et al. Prenatal diagnosis and the pediatric surgeon: the impact of prenatal consultation on perinatal management. *J Pediatr Surg* 1996;31:156–63.
2. Kemp J, Devenport M, Pernet A. Antenatally diagnosed surgical anomalies: the psychological effect of parental antenatal counselling. *J Pediatr Surg* 1998;33:1376–9.
3. Langer M, Ringle M. Prospective counselling after prenatal diagnosis of fetal malformations: interventions and parental reactions. *Acta Obstet Gynecol Scand* 1989;68:323–9.
4. Spielberger CD, Gorsuch RL, Lushene RF. Manual for State-Trait Anxiety Inventory. Palo Alto, CA: Consulting Psychologists Press; 1970.
5. Caniano A, Baylis F. Ethical considerations in prenatal surgical consultation. *Pediatr Surg Int* 1999;15:303–9.
6. Flake AW. Prenatal intervention: ethical considerations for life-threatening and non-life threatening anomalies. *Seminars Pediatr Surg* 2001;10: 212–21.
7. Farrant W. Stress after amniocentesis for high serum alpha-fetoprotein concentrations. *BMJ* 1980;281:452–4.
8. Burton B, Dillar R, Clark E. The psychological impact of false positive elevations of maternal serum alpha-fetoprotein. *Am J Obstet Gynecol* 1985;151:77–82.
9. Di Giusto M, Lazzari R, Giorgetti T, Paesano R, Pachu A. Psychological aspects of therapeutic abortion after early prenatal diagnosis. *Clin Exp Obstet Gynecol* 1991;18:169–73.
10. Lorenz R, Kuhn M. Multidisciplinary team counselling for fetal anomalies. *Am J Obstet Gynecol* 1989;161:263–6.
11. Dallaire L, Lortie G, Des Rochers M, Clermont R, Vachon C. Parental reaction and adaptability to the prenatal diagnosis of fetal defect or genetic disease leading to pregnancy interruption. *Prenat Diagn* 1995;15:249–59.
12. Hunfield J, Wladimiroff JW, Passchier J, Venema-Van Uden M, Frest PG, Verhage F. Emotional reactions in women in late pregnancy (24 weeks or longer) following the ultrasound diagnosis of a severe or lethal malformation. *Prenat Diagn* 1993;13:603–12.
13. Drotar D, Baskiewicz A, Irvin N, Kennell M, Klaus M. The adaptation of parents to the birth of an infant with a congenital malformation: a hypothetical model. *Pediatrics* 1975;56:710–7.
14. Detraux J, De Vries G, Vanden Eynde S, Courtois A, Desmet A. Psychological impact of the announcement of a fetal abnormality on pregnant women and on professionals. *Ann NY Acad Sci* 1998;847:210.
15. Madarikan B, Tew B, Lari J. Maternal response to anomalies detected by antenatal ultrasonography. *Br J Clin Pract* 1990;44:587–91.
16. Gotzmann L, Schonholzer S, Kolbe N, et al. Suspected fetal malformation in ultrasound examination: effects on the psychological well-being of pregnant women. *Ultraschall Med* 2002;81: 33–40.
17. Hunfield J, Agterberg G, Wladimiroff JW, Passchier J. Quality of life and anxiety in pregnancy after late pregnancy loss: a case–control study. *Prenat Diagn* 1996;16:783–90.
18. Marteau T. Screening in practise: reducing the psychological costs. *BMJ* 1990;301:26–8.
19. Marteau T, Cook R, Kidd J, Johnston M, Slack J, Shaw R. The psychological effects of false-positive results in prenatal screening for fetal abnormality: a prospective study. *Prenat Diagn* 1992;12:205–14.
20. Harding L, Malone P, Wellesley D. Antenatal minimal hydronephrosis: is its follow-up an unnecessary cause of concern? *Prenat Diagn* 1999;19: 701–5.