

Psychobiosocial Intervention in Threatened Premature Labor

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Abstract: None available.

Full Text: Headnote ABSTRACT: A pilot study was conducted to investigate whether psychobiosocial intervention could be a useful adjunct to medical management of premature labor. 44 women threatening premature delivery (range of 20 to 34 weeks gestation) were referred by hospital clinicians. Nineteen of these patients were hospitalized, 28 were on tocolytic medication, and 42 on total bedrest. Hypnosis was used with all subjects; 77% also received body awareness techniques designed to decrease autonomic reactivity and muscle tension. Average treatment was seven two-hour sessions over three weeks. Forty women (91%) progressed to term; three who did not had twins and one patient, who was at 4 cm. dilation when diagnosed, received only one hypnosis session. Common issues expressed during hypnosis, their impact on the pregnancy, and how they were modified are discussed. The positive results of this study suggest that a randomized, controlled trial of psychobiosocial interventions during premature labor is warranted. INTRODUCTION Preterm birth is the primary cause of neonatal mortality and morbidity in the United States.¹ The comprehensive report Preventing Low Birthweight² discusses the high human and economic costs of these births, and advocates reducing risk of prematurity and low birthweight by recognizing the importance of health care system factors. Prenatal providers need to organize their programs to manage a wider variety of patient problems and risk factors. For example, nutritional counseling, psychosocial counseling, strategies to modify smoking and other health compromising behaviors, and related services should be provided directly or through a well-organized referral system, (p. 13) Prematurity is a critical problem that causes great suffering and is tremendously expensive. Tiny preterm infants are often separated from their parents for observation or medical treatments. Costs include initial hospitalization costs, costs of additional hospitalizations for babies who live, and the long-term expenses of caring for children with disabilities or chronic birth-related diseases, including work loss by parents.² The United States trails fifteen other countries in the percentage of women delivering full-term infants.³ According to Simon,⁴ seven out of 100 infants are premature, and one-fourth of those who survive the first month have handicaps including blindness, deafness, cerebral palsy, and mental retardation. The last two months of pregnancy allow the fetus to develop reflexes that control breathing, absorb calcium to strengthen bones, produce fat to regulate body heat, and build immunities to fight infections. A premature baby's lungs, liver, brain, and other organs do not function as well as do organs in full-term infants. Prematurity can adversely affect parental-infant interaction and bonding, especially when there are medical complications. Goldberg⁵ has described how the infant learns to "feel effective" by obtaining parental attention through crying, smiling, and eye contact. Parents may also need contact with a responsive infant to develop an optimally healthy, nurturing relationship with their baby. Preventing Low Birthweight² groups prematurity risk factors in six categories: 1. Demographic Risks: age (under 17 or over 34); race (black); low socioeconomic status; unmarried; low level of education. 2. Medical Risks Predating Pregnancy: parity (over four children); low weight for height; genitourinary anomalies or surgery; diseases such as diabetes and hypertension; nonimmune status for infections; poor obstetric history, including previous low birthweight infant or miscarriage; maternal genetic factors (i.e., when the pregnant woman was born, her mother was underweight for height). 3. Medical Risks in Current Pregnancy: multiple pregnancy, poor weight gain; short interpregnancy interval, hypotension, hypertension, preeclampsia, toxemia, selected infections, first or second trimester bleeding, placental problems such as placenta previa, hyperemesis, oligohydramnios/polyhydramnios, anemia, isoimmunization, fetal anomalies, incompetent cervix, spontaneous premature rupture of membranes. 4. Behavioral and Environmental Risks: smoking, poor nutrition; alcohol and

other substance abuse; DES and other toxic exposures, including occupational hazards; high altitude. 5. Health Care Risks: absent or inadequate prenatal care; iatrogenic prematurity (i.e., from elective cesarean section). 6. Evolving Concepts of Risk: physical and psychosocial stress, uterine irritability, events triggering uterine contractions, cervical changes detected before onset of labor, infections such as mycoplasma, inadequate plasma volume expansion, and progesterone deficiency. Research has accumulated on psychosocial influences upon premature labor. Ferreira found feelings of inadequacy or immaturity to be associated with premature birth. McDonald, Gunther, and Christakes⁷ used the Minnesota Multiphasic Personality Inventory (MMPI) and found more abnormal obstetric outcomes among women with lower ego strength and who tested higher in tension, guilt proneness, intellectualization, and obsessive rumination. Levinson and Schneider⁸ concluded that psychotherapy to reduce maternal anxiety and stress was helpful in treating habitual abortions. McDonald⁹ linked premature rupture of membranes with elevations on the MMPI Social Introversion Scale. Negative attitudes toward pregnancy have been related to premature delivery.¹⁰⁻¹¹⁻¹² Klein and associates¹³ found women who had complications of delivery to have less stable personalities, to be more ambivalent toward pregnancy, and to have more difficult deliveries. Newton¹⁴ correlated negative attitudes toward motherhood to miscarriages. Omer and associates^{15,16} found pregnant women with higher anxiety scores were more apt to develop premature contractions than those with lower anxiety. Life stress has been reported as greater in women who deliver prematurely.^{10,17} The social and psychological stress of being a single mother has been shown to be associated with premature deliveries, independent of objective factors such as poverty.^{18,19,20} Herms and Gabelman²¹ showed that women who later delivered prematurely were less well adapted socially and less attached to their families than women who delivered at term. Previous work by Mehl and associates^{22,23,24,25,26} found psychosocial variables to interact with medical variables to increase risk of birth complications. Variables associated with higher risks included low social support, social stress, negative beliefs and outlook, and internal stress. Internal stress was defined as high fear and anxiety with inadequate coping styles, resulting in a relatively constant state of autonomic arousal. Laboratory and biochemical studies have found other variables related to premature birth. Laboratory research in which uterine activity in nonpregnant women was measured directly has demonstrated that unpleasant or frightening stimuli, such as sudden noises or the prospect of receiving an injection, may lead to increases in the frequency and amplitude of contractions or to desynchronization of uterine activity.^{27,28} Presence of a relaxing stimulus, such as having the subject concentrate on a calm, pleasant activity, could quiet the uterus.²⁷ Psychological stress leads to an abrupt rise in the levels of catecholamines, corticosteroids, and neuromuscular reactivity.^{29,30,31,32} Persons with chronic anxiety have high catecholamine blood levels.³³ Matthew et al.³⁴ suggest that treatments for anxiety, such as relaxation training, decrease catecholamine levels in these patients. Stimulation of alpha-adrenergic receptors on the uterus increases uterine motility, whereas stimulation of beta-receptors quiets the uterus.³⁵ Norepinephrine stimulates alpha receptors, while epinephrine stimulates both. Because of this, these catecholamines have different immediate effects on the uterus. Epinephrine has an immediate inhibitory effect, while norepinephrine stimulates contractions. The immediate effect of epinephrine is thought to be a reason for prolongation of labor in anxious women.³⁶ Lederman and associates³⁷ correlated epinephrine blood levels with self-reported anxiety of women during labor (Spearman correlation of 6.0). The duration of labor was directly related to epinephrine secretion. High levels of anxiety and blood epinephrine led to a pronounced decrease in uterine activity, particularly in the second stage of labor. Epinephrine's inhibitory effect is time-limited. After a period of time that differs for each woman, uterine contractions return to their initial level and a rebound effect occurs, leading to a pronounced increase in uterine activity. The usual explanation for the rebound effect is based on epinephrine's stimulating both types of adrenergic receptors. As labor progresses, the amount of alpha-receptor stimulation rises as compared with beta-receptor stimulation. Increasing estrogen levels either increase the number of or the sensitivity of alpha-receptors. Then the inhibitory effect of epinephrine is transformed to a stimulatory effect. Omer³⁶ has proposed another possible explanation for the rebound effect of

epinephrine. Epinephrine causes a steep rise in the level of F-prostaglandins³⁸ and of E-prostaglandins³⁹. Both of these prostaglandins are powerful uterine stimulants. Corticosteroid excretion and production is increased in states of high stress. Omer³⁶ has suggested an indirect effect of this increase in premature labor stimulation. Infectious diseases in general increase risk for premature labor.⁴⁰ Chorioamnionitis is one important antecedent of premature labor. A decrease in immune defense (related to increased corticosteroid production) may lower the threshold for chronically stressed women to develop chorioamnionitis. Selye⁴¹ found that stress increases oxytocin secretion. Stressful procedures (immobilization and forced swimming) in animals brings about large increases in oxytocin production.⁴² Uterine sensitivity to oxytocin increases as pregnancy progresses.⁴³ Takahashi and associates⁴⁴ performed oxytocin challenge tests on women, some of whom later developed premature labor. Those developing premature labor had been much more sensitive to the effects of oxytocin. Persons under stress are known to suffer from high muscle tone and a tendency to overreact.^{29,32} This tendency has been found to characterize women who tend to develop premature labor.^{45,46,47,48} These studies have shown that a patient's level of neuromuscular reactivity, as measured by the rheobase in her anterior tibial muscle, is a good predictor of premature labor. The lower the rheobase, the lower the risk for premature delivery. Eipper and Konnecke⁴⁵ successfully predicted the outcome of tocolytic treatment based upon changes in the desired direction of the rheobase measurement. Konig and Seidenschur⁴⁶ hypothesized that these rheobase measurements pointed to a higher level of automatic reactivity in those women at risk for premature delivery. Omer³⁶ has speculated that increased muscle tone and autonomic overreactivity may be the common denominator between anxious individuals and women who deliver prematurely. It may also explain the reported effectiveness of relaxation exercises in inhibiting premature labor.^{15,16,49} Herms⁴⁹ showed that a relaxation exercise led to an increase in rheobase measurement and to a decrease in spontaneous uterine contractions in women in the later stages of pregnancy. Omer and associates^{15,16} developed a hypnotic relaxation procedure for women with premature contractions. The intervention, aimed at diminishing anxiety and body tension, was highly effective in inhibiting premature labor. METHODS The above information led to the belief that intervention in premature labor could be effective in decreasing stress and could improve the effectiveness of medical treatment. Hypnosis and body awareness techniques designed to decrease autonomic reactivity and muscle tension were used. Previous experience had shown hypnosis to be an excellent modality with which to facilitate relaxation and physiological change.^{24,25,50,51} A (nonrandom) sample was recruited consisting of referrals from hospital based clinicians who were willing to involve us in their care of women threatening premature delivery. All women were of middle socioeconomic class. The women were seen in the our office if they had not been hospitalized or were not on bedrest at home. The nature of our clinical care was explained. All patients chose to participate and received an intake interview which carefully reviewed their life history for the past one and a half years, the medical interventions already undertaken, their family and social situation, and other unique stresses and demographic characteristics. Then hypnosis was used. Our goals were to facilitate a profound relaxation in which suggestions for uterine quiescence could be received. Patients were asked in a trance state to review all those factors which might be contributing to the uterine irritability, and to tell us, if possible, what they were. Ideomotor techniques were used for those who could not verbally respond. When appropriate, techniques were utilized to decrease neuromuscular reactivity. These techniques use a combination of physiological (biofeedback) monitors with hands-on somatic therapy. Patients are taught to be aware of patterns of breathing and of chronic muscular tension; learn techniques for neuromuscular relaxation; and are assisted in changing patterns of chronic tension, as discussed in Mehl and Peterson.⁵¹ From hypnosis sessions, it became apparent that most patients could benefit from family and/or couples' therapy. This was provided when indicated and possible. Acupuncture and/or homeopathy were provided to patients who requested them, and those who received these treatments attested to their helpfulness. No judgement was made on the effectiveness of these techniques. These treatments may have been placebo, and the best placebos are those in which the patient believes. Another important consideration for any intervention for these

women is that the Hawthorne effect may be sufficient to stop premature labor. While it is difficult at this point to determine exactly what influences are operating, it can be useful to utilize various possibly beneficial techniques with the awareness that placebo or Hawthorne effects may be contributing to the prevention of preterm births. Women received an average of seven sessions (two hours long) over three weeks. Number of hypnosis sessions varied from only one session to four sessions weekly for the first three weeks, tapering to once weekly by eight weeks, and continuing at that frequency until delivery twelve weeks later. The patients determined the number of sessions according to their sense of need and finances. Input was provided to the patients that more sessions were needed, that their choices were appropriate, or that fewer sessions would be sufficient based on the clinical condition of the patient and the rate of change in that clinical condition. Many patients were seen by the author for reduced or no fee to complete the pilot study. Sessions were provided either in hospital or at the office depending upon whether the patient could travel. Patients at absolute bedrest had sessions in their home until the obstetrician approved their coming to our offices. None of the patients had been diagnosed prior to the onset of premature labor as being at risk with the exception of the three cases of twins. The twins were included, since we wondered whether labor could be stopped. The remainder of the women seemed an ideal population since they had defied correct classification using current obstetrical science. RESULTS Forty of the 44 patients progressed to term. Three of the patients who did not were in premature labor with twins. The other patient was 4 cm. dilated by the time hypnosis was attempted, and had been barely contained by tocolytics. There was time for only one hypnosis session before the patient delivered. Thus, while this was not a randomized, controlled trial (this was only a pilot study), obstetrical colleagues have expressed surprise at the high percentage progressing to term, and have confirmed the need for a randomized controlled trial. Typically 40% of women stop premature labor regardless of intervention chosen.⁵² If we conservatively assume that only the women hospitalized (all on tocolytics) were truly in premature labor, then 11 women should have delivered prematurely. Only two of these women did deliver prematurely (the other two sets of twins began treatment outside the hospital). This difference would be statistically significant. An important caveat is we did not start immediately upon hospitalization, but some time later, and occasionally not until the third day post-hospitalization. This could have artificially raised our seeming effectiveness. The possibility exists that a high percentage of the patients we saw would have progressed to term anyway. The most common concerns expressed by patients during hypnosis were: 1. Lack of social support (especially from the husband) for maintaining the pregnancy. There were high levels of stress in the family and a need for the women to be functioning to meet these stress needs. These women unconsciously perceived premature delivery as a solution to their problems. Hypnotic suggestions refrained the mother's primary duty as to the new baby. Husbands were defined as more capable than the women thought. The hospital was redefined as less desirable for the baby than the womb. Prenatal bonding techniques were utilized to help the women envision the baby as a real person to whom they were committed and to whom they could already feel love. 2. High levels of internal stress (fear and anxiety) with inadequate coping styles. These women were already coping at maximum capacity with the fears and anxieties pregnancy engendered. They unconsciously viewed delivery as a means of ending their stress. These women could contain no longer the fears and anxieties of pregnancy. Hypnotic suggestion aimed for less personal involvement in the fears and anxieties. The fears and anxieties were reframed as normal and even desirable. Patients were also assisted in developing more healthy coping styles, including use of the practitioners as a support system. 3. High external stress, low body awareness, and high neuromuscular reactivity. These women lived high stress lives and had little awareness of their bodies' responses to those stresses. They were at a state of high levels of neuromuscular arousal (autonomic arousal) and were unaware of this status. Body awareness training was very helpful. Hypnosis was used to retrain attentiveness to internal body cues, and to teach relaxation and recognition of the need to relax in the face of external stress. Lifestyle management was used reduce work-load and/or commitments. 4. Very negative beliefs about birth coupled with a coping style of avoidance and/or somatization with high levels of internal

stress from those beliefs. These women unconsciously viewed premature delivery as a way to avoid labor and birth. Hypnotherapy was used to change beliefs about labor and the capacity of give birth, and new coping styles were taught. 5. Poor overall general physical health with a social support system that encouraged illness and dependence upon hospitals and doctors. These women were internally comfortable with the patient role status and with being treated by specialists. Their families provided more stress when the patient appeared well. Conditions included allergies, arthritis, frequent injuries, asthma none sufficiently severe to warrant a high-risk classification on medical or obstetrical grounds. The clinicians were offered as specialists for these women. The women could retain a comfortable role by working to avoid premature labor and delivery. These five categories were the most common presentations noticed. All patients fit into one or more of these categories.

CONCLUSIONS This study has shown that sufficient grounds exist for a randomized, controlled trial of psychobiosocial interventions during premature labor. Such a study is currently underway. Different criteria were used to diagnose each woman in this pilot study as being in premature labor, and different treatment protocols were used. Our study will use one treatment protocol with the same patient population with consistent diagnostic criteria and medical treatment. Through such a rigorous study, the true effectiveness of psychobiosocial methods can be determined. For now, it is hoped that this paper will encourage others to try psychobiosocial intervention during premature labor. The risk is negligible and the benefits may be extensive. A team of psychologists in Uruguay have recently reported similar results as these in stopping premature labor with psychotherapy.⁵³ Hopefully, this group will organized their own controlled trial. References

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