CURRENT THERAPY IN OBSTETRICS

CHARLES GLOVER

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1988

B.C. Decker Inc • Toronto • Philadelphia

Publisher

B.C. Decker Inc
3228 South Service Road
Burlington, Ontario L7N 3H8

B.C. Decker Inc
320 Walnut Street
Suite 400
Philadelphia, Pennsylvania 19106

Sales and Distribution

United States and Possessions
The C.V. Mosby Company
11830 Westline Industrial Drive
Saint Louis, Missouri 63146

Canada
The C.V. Mosby Company, Ltd.
5240 Finch Avenue East, Unit No. 1
Scarborough, Ontario M1S 5P2

United Kingdom, Europe and the Middle East
Blackwell Scientific Publications, Ltd.
Osney Mead, Oxford OX2 OEL, England

Australia and New Zealand
Harcourt Brace Jovanovich Group (Australia) Pty Limited
30–52 Smidmore Street
Marrickville, N.S.W. 2204
Australia

Japan
Igaku-Shoin Ltd.
Tokyo International P.O. Box 5063
1–28–36 Hongo, Bunkyo-ku, Tokyo 113, Japan

Asia
Info-Med Ltd.
802–3 Ruttonjee House
11 Duddell Street
Central Hong Kong

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Libriger Book Distributors
Warehouse Number 8
"Die Ou Looiery"
Tannery Road
Hamilton, Bloemfontein 9300

South America
Inter-Book Marketing Services
Rua das Palmeriras, 32
Apto. 701
222–70 Rio de Janeiro
RJ, Brazil

Current Therapy in Obstetrics

ISBN 1–55664–019–6

Library of Congress catalog card number: 88–70682

10 9 8 7 6 5 4 3 2 1

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To Jean,
whose encouragement, support, and
continued confidence make everything possible

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PREFACE

Modern medicine is like a tree whose branches, which divide so majestically, require the invisible roots that represent the strength of the sciences from which therapy grows. So important are the basic concepts that I would say with Democritis, "Rather would I explain the cause of a single fact than become King of the Persians."

With the rapid growth of new knowledge fostered by important discoveries, together with the increasing recognition that nature is of one piece, I have the pleasure of being able to explain the cause of many facts that have led to an ever-improving basis for therapy in obstetrics.

During the past several years, there has been an extensive reappraisal of the physiologic changes with pregnancy and its associated disorders, and there has been a concomitant refinement of diagnostic procedures accompanied by a sounder evaluation of therapeutic approaches, which remain of primary concern to the physician.

Clinical management is the central theme of this book, which is destined primarily for those who practice obstetrics, but it will also serve as a useful reference tool for anyone whose practice includes the gravid patient. Chapters have been written expressly for this book by a distinguished cadre, carefully selected for their clinical and investigational interest in the assigned topics, as well as their status as authorities in the field. Their views on current management have been succinctly portrayed, and the presentations are devoid of extraneous material. Thus, the book represents an authoritative distillation of current thought that is well ordered and representative of accepted obstetric practice.

A book of this type would be impossible without the wholehearted support of the contributors. The Editor wishes to thank the staff of B.C. Decker, specifically Mary Mansor for her unstinted assistance and guidance. Finally, as with any such enterprise that has many contributors, one cannot embark along the course of such a volume without a secretary who is not only capable, but has the patience of Job, and I wish therefore to express my sincere and heartfelt appreciation to Nancy Urban.

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PLANNED PRENATAL CARE: KEY TO THE FUTURE

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Prenatal care addresses many of the medical and obstetric problems that occur during the prenatal period and that are discussed in other chapters of this book. It is the medium through which the screening, diagnosis, and therapies discussed in these chapters usually take place. In addition, prenatal care, from its earliest inception, was intended to prevent the onset of morbidity during pregnancy by identifying those at risk and reducing their risks and by promoting healthy behaviors among all pregnant women.

Specifically, prenatal care consists of a series of activities that are designed to:

1. Detect physical and psychosocial risk factors and early signs of asymptomatic diseases that may adversely affect mother and fetus.
2. Diagnose and treat maternal and fetal abnormalities as soon as they appear.
3. Provide guidance and education regarding behaviors and signs that may influence maternal and fetal well-being as well as for delivery arrangements and postpartum, family planning, and infant care arrangements.

Over time, as screening and diagnostic tests and problem-specific therapies developed, certain aspects of prenatal care, such as history-taking, selected laboratory tests, and specific schedules of visits, became "routine." In theory, routinization of these components of prenatal care allowed all women to benefit from important advances in the field relatively quickly. In practice, it also promoted a system of care in which higher priority could be assigned to objective standards of care rather than to individual patient needs.

Although adherence to standards of prenatal care has never been monitored regularly, there is evidence that some providers have deviated from what might be considered routine for many years. These deviations are due, at least in part, to variations in accepted standards across obstetric textbooks and professional societies and to the responsiveness of providers to individual patient needs.

In the latter half of the 1980s, there is a general recognition that routine prenatal care no longer exists. Still remaining are standards for certain activities, some of which are controversial. Other routines, such as the number and frequency of prenatal visits and the content of those visits, are in flux. Prenatal care is becoming a process that is planned with each individual woman based on her specific needs as derived from her history, laboratory findings, physical examination, and the progress of the current pregnancy. Prenatal care, of necessity, is mercurial and dynamic.

CONTROVERSIAL ISSUES

History—The Cornerstone of Prenatal Care

Background. A careful, systematic history is critical to identify whether there were problems in previous pregnancies that might repeat themselves in the present pregnancy and to detect known medical problems or conditions and behavioral or social circumstances that might compromise the current pregnancy. It constitutes part of the baseline information that should be available for every prenatal patient. The history, therefore, should be targeted, but at the same time it should be broad enough to detect a range of clues to potential problems. A prenatal history should include the following:

1. Medical history: diseases, conditions, and surgeries throughout the life of the individual.
2. Obstetric history: details on the course and outcome of each previous pregnancy.
3. Gynecologic history: experience with and treatment of gynecologic problems, including sexually transmitted diseases and contraceptive utilization.
4. Immunization status for communicable diseases.
5. Family medical and genetic history.
6. Nutritional problems and treatments.
7. Selected behaviors, including ingestion of cigarettes, alcohol, and drugs, and work outside the home.
8. Social history: marital status, family problems, financial status.

To complete a history, all prior medical records should be obtained and reviewed. The history should be taken

as early in pregnancy as possible, preferably at the first prenatal visit, before 12-weeks gestation.

Each positive finding in a history suggests one or more activities that should be undertaken. The management of many specific medical and obstetric problems is given in other chapters of this volume. In addition to those, appropriate courses of action for behavioral, social, and nutritional problems also require attention. They are addressed below in the section on referral networks.

Controversy. What is controversial about history-taking is not whether it should be done but how it should be recorded so that the information can be put to greatest use. In the past 15 years, a number of forms for recording historical data as well as other information about the pregnancy have been developed. Some of the forms require calculation of weighted scores that determine the risk classification of the pregnancy (e.g., high, medium, low). Others do not yield scores, but relevant problems can be recorded and reviewed in a simple but systematic fashion.

The extent to which either type of instrument is used by providers of prenatal care is unknown. Moreover, the relative value of one type of form over another in improving the management of selected pregnancies has not been examined. The greatest amount of controversy is with regard to the instruments that yield weighted scores. There are several reasons for this:

1. The instruments have not been validated or modified for differences in age, race, social class, or geographic area.
2. Cut-points for high risk differ not only by population group but also by outcome.
3. The instruments are susceptible to mechanistic application, to becoming ends in themselves rather than tools for intervention, and to producing anxiety in the women labeled high-risk (whether the label is correct or not).

In addition to controversies surrounding the type of form that is most appropriate for recording a history, there is some debate about what items should be included in a history-taking instrument. Most of the forms available today request very little information on nonclinical factors, such as social, behavioral, and environmental risks. Yet, some of these factors (e.g., smoking) constitute major preventable causes of perinatal morbidity.

Recommendations. Although controversies exist, it is reasonable to conclude that: (1) a careful, systematic history should be taken on each pregnant woman, and the information should be recorded in a systematic manner. (2) A check-off history can be a helpful tool if it is used as a reminder to increase communication between humans, not as a short cut to abbreviated care. (3) One specific tool for recording historical and other relevant information during pregnancy cannot be recommended over another. All have positive and negative attributes. (4) Careful attention should be given to the nonclinical characteristics that may not be well represented in available instruments but are important determinants of pregnancy outcome, some of which (e.g., work place environment, consumption of alcohol and drugs) may require sensitive probing during the process of history-taking.

Screening Tests

Prenatal care includes a set of laboratory tests that are used to screen for selected conditions that can compromise the mother or infant or both. Recommendations for these tests have evolved over time as the capabilities to identify disorders and the technology to do screening tests have developed. For the most part, tests were absorbed into routine prenatal care before the clinical trials required to establish efficacy were conducted. As a result, there is some remaining controversy associated with several of them.

Hemoglobin/Hematocrit

Background. A blood test for hemoglobin or hematocrit levels is done at the first prenatal visit, early in the third trimester, and at other times, as needed. It is considered important to assess hemoglobin levels at the first visit in order to detect anemia early in pregnancy so that the cause may be ascertained and the condition treated. Monitoring hemoglobin levels over time allows an assessment of the amount of change in levels and provides for additional treatment, if necessary, before the blood loss associated with delivery and the postpartum period occurs.

Controversy. Since pregnancy is characterized by a dilutional anemia that is most evident at 28 to 32 weeks and is apparently normal, there is controversy about the "ideal" prenatal hemoglobin and hematocrit values. Nevertheless, values that are likely to be abnormal (e.g., <11 g per deciliter in the second and third trimesters) can be identified so that further investigation can be initiated.

Recommendations. (1) A blood sample for hemoglobin and hematocrit readings should be drawn at the first prenatal visit. The need for additional laboratory evaluation should be determined by historical factors or unusual clinical findings. Ethnic or social circumstances may dictate the need for special testing, such as sickle-cell test or hemoglobin electrophoresis or both. (2) A hemoglobin of less than 10 g per deciliter in the early part of pregnancy deserves further evaluation. (3) Early in the third trimester, repeat hemoglobin and hematocrit evaluations should be done as dilutional anemia is anticipated. If the hematocrit increases, one may become suspicious of contracted blood volume and look for evidence of intrauterine growth retardation or preeclampsia.

Cervical Cytology

Background. A cervical smear to detect invasive cancer of the cervix as well as the premalignant forms—cancer in situ and cervical dysplasia—is recommended once during pregnancy, at the first prenatal visit. The smear is recommended during pregnancy because (1) this period is the only time many women are in contact with a health care provider, (2) it can be done easily during a vaginal examination, and (3) it promotes coverage of a particularly high-risk group of women, multiparas of low socioeconomic status.

Controversy. Since all women are screened, the screening process covers a number of women who are at low risk. Studies in Great Britain have shown that the probability of developing cervical cancer—in the short term (10 years)—among women less than 25 years old is very low. In addition, women who are tested during pregnancy are more likely to have a higher rate (about six times as great) of false-positive tests than those in the general population. Such a high false-positive rate for young women during pregnancy limits the acceptability of universal screening because of the stress likely to be engendered by a false-positive finding. Also, although a few young women die each year as a result of cervical cancer, the death rate is very low when compared with that of older women. An alternative approach to screening for cervical cancer would involve using age as the primary screening test, that is, routine smears would only be done on women age 25 and older. This approach has not received widespread support, however, because the Papanicolaou smear can also yield evidence of sexually transmitted diseases, such as condylomata or herpes.

Recommendation. Because the Papanicolaou smear can detect conditions other than cancer and its premalignant manifestations, it is recommended for all women at least once during pregnancy.

Dipstick Urinalysis

Background. A simple and safe method for testing the urine for selected components is the dipstick urinalysis at each visit. The test is usually done for two reasons: (1) to detect proteinuria, which is a sign of preeclampsia and may indicate acute or chronic renal disease, and (2) to detect glycosuria, which may be a sign of gestational diabetes. Random urine testing for proteinuria is considered cost-effective, but the value of testing for glycosuria is controversial.

Controversy. Reliable estimates of the sensitivity and specificity of this test for predicting gestational diabetes have not been determined, although the random timing of the test would suggest that it would not be highly predictive. Moreover, glycosuria during pregnancy is common and frequently physiologic.

On the other hand, persistent glycosuria is associated with maternal diabetes and should signal the need for further investigation.

Recommendations. (1) A dipstick test of the urine to detect proteinuria is recommended at each prenatal visit. (2) To detect persistent glycosuria, which should signal the need for further investigation of maternal diabetes, a dipstick reading at each visit is also recommended.

Blood Tests for Glucose

Background. Currently, carbohydrate intolerance screening is not part of prenatal care unless risk factors for diabetes mellitus are present. However, detection of gestational diabetes is essential because the condition has been associated with maternal and fetal complications. When risk factors, such as family history of diabetes, previous macrosomic infant, poor obstetric history, or persistent glycosuria, are used as indicators for further screening for gestational diabetes, 30 to 40 percent of affected patients are not detected. A more sensitive screening procedure involves administration of 50 g of glucose orally, followed in 1 hour by a plasma glucose test. A definitive diagnosis of gestational diabetes should be based on a 100-g, 3-hour oral glucose tolerance procedure.

Controversy. At present, there is no clear evidence of the cost-effectiveness of universal 1-hour screening of plasma for glucose tolerance. As a result, recommendations vary. The American Diabetes Association and the Centers for Disease Control have endorsed universal screening of all pregnant women. The American College of Obstetricians and Gynecologists recommends screening of women who are 30 years of age or older. The recommendation further states that if any risk factors are present, screening should be performed regardless of age.

Recommendations. (1) All pregnant women should be screened for glucose intolerance between 24 to 28 weeks using a 50-g oral glucose load, followed by a 1-hour plasma glucose test. (2) If risk factors are present, a glucose screen should be performed early in pregnancy. If that screening test is negative, it should be repeated at 24 or 28 weeks.

Urine Culture

Background. Routine screening for asymptomatic bacteriuria is not recommended at present in the United States, although interest is growing. Women with bacteriuria of pregnancy are significantly more likely to develop pyelonephritis, which in turn is closely associated with perinatal mortality and low infant birth weight. The relationships among these factors are not clearly understood, but treatment of bacteriuria significantly lowers the risk of pyelonephritis from 28 to 3 percent and, through that route, may affect the incidence of low birth weight in a positive direction.

Controversy. The incidence of asymptomatic bac-