The YEAR BOOK of

Obstetrics and Gynecology

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Introduction

The sheer volume of the medical literature continues to expand and is virtually certain to continue to do so. For many, the YEAR BOOK has long fulfilled a major role in meeting the challenges of keeping abreast of the latest developments. The newest "wrinkle" in the continuing educational process essential to the practice of medicine is that of recertification. The first recertification examination has been given during the past year and the second will occur as this edition goes to press. Many readers have indicated that they have found the YEAR BOOK valuable in preparing for these examinations, just as they have found it helpful in the primary certification process.

Chronic hypertension represents, at the same time, one of the most common and one of the most serious maternal diseases. In a special article in this edition, Drs. Frederick P. Zuspan and Richard O'-Shaughnessy of Ohio State University have reviewed this pregnancy complication and have emphasized a therapeutic approach based on what is known of the pathophysiologic mechanisms. The senior author is certainly one of the world's foremost authorities on hypertensive diseases in pregnancy, having devoted his professional lifetime to the area.

The second special article also relates to a vexing clinical problem—hirsutism. Written by Drs. Ronald C. Strickler and James C. Warren of Washington University, it summarizes the many recent advances in our understanding of androgenic syndromes in the female patient. A substantial proportion of the new findings, including especially the demonstration of the importance of free testosterone levels, has come from Dr. Warren and his colleagues.

It gives me special pleasure to note the help of Dr. Frank J. Zlatnik as Assistant Editor of this edition of the YEAR BOOK. Doctor Zlatnik is a colleague from the faculty of the University of Iowa and I look forward to a long and productive relationship with him in these editorial responsibilities. The readership will, I am certain, appreciate Doctor Zlatnik's thoughtful and scholarly approach to clinical matters.

ROY M. PITKIN, M.D.

PART ONE

OBSTETRICS

Maternal Physiology and Diseases
Chronic Hypertension in Pregnancy*

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Introduction

Hypertension is the most common medical disorder seen during pregnancy. Fortunately, maternal deaths have become rare; however, when they do occur, hypertension is frequently implicated. Perinatal morbidity and mortality are often due to maternal hypertension, and they remain as major areas of concern for the practitioner as well as the investigator.

Pregnancy-induced hypertension (PIH), synonymous with preeclampsia-eclampsia or toxemia of pregnancy, is the most common hypertensive disease of pregnancy.[1] The empty plaque that resides on a colonnade of Chicago Lying-in Hospital at the University of Chicago has been reserved for the discoverer of the basic etiology of eclampsia. It remains blank to this date, because the fundamental cause of acute hypertension in pregnancy is unknown. Nonetheless, the pathophysiology of PIH is now better understood, and reasonably effective plans of management, all palliative, have been developed.[2]

So-called chronic hypertensive diseases make up between one third to one half of the cases of hypertension of pregnancy,[1] although the true etiology in many of these cases is never known. When the hypertensive disorders of pregnancy were reviewed at Chicago Lying-in Hospital, the following discharge diagnoses were recorded from 7,893 cases: (Table 1).

Evaluation of any list of clinical disease diagnoses in patients who have hypertension in pregnancy is fraught with error. It is often difficult to differentiate these diseases, and the impreciseness of the classification of chronic hypertension suggests that statistics published without a renal biopsy specimen being obtained are probably incorrect.

The category of chronic hypertensive vascular disease mainly includes essential, or primary, hypertension.[1] Affecting 26 million Americans, essential hypertension is principally a disease of the older gravi-

*We extend special thanks to Ms. Sandy Lewis for diligence in preparation of the manuscript.

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TABLE 1.—Clinical Hypertensive Diagnosis (Chicago Lying-in Hospital)

Disorder	%
Preeclampsia	46.0
Eclampsia	1.7
Chronic hypertensive vascular disease	51.0
Chronic renal disease	1.1

da, although the diagnosis is now being made much more frequently in adolescents and even children.[3] Essential hypertension is of unknown cause and remains a diagnosis of exclusion. There are several secondary causes that statistically will affect only a small number of patients, but some of them are curable, and the obstetrician should consider these possibilities in the differential diagnosis of any hypertensive patient.

It is also known that pregnancy is hypertensogenic, which permits the obstetrician to diagnose latent essential hypertension many years before it becomes overt.

The problem of chronic hypertension occurs diffusely throughout society. On the other hand, primary PIH is predominantly distributed among a small sector of the population—the young, poor, malnourished primigravida—and thus is more likely to be seen in an urban population. For many hospitals and physicians, then, chronic hypertension is a greater problem than PIH. Table 2 indicates the profile differences between acute and chronic hypertension.

Because chronic hypertensive disease as a classification encompasses many different diseases, the pathophysiology may be varied and distinct from PIH. The altered physiology of chronic hypertension in pregnancy has not been well studied, and consequently there is little agreement among physicians as to what constitutes a reasonable plan of management.

The objective of this essay is to review data on chronic hypertensive disease as a complication of pregnancy. It is not our purpose to discuss PIH, except as a point of contrast with chronic hypertension.

TABLE 2.—Differences between Acute and Chronic Hypertension

	Pregnancy-Induced Hypertension	Chronic Hypertension
Age	Young, usually primigravida	Older (> 30 yr usually), multigravida
Onset	After 24 wk of pregnancy	Before pregnancy or before 24 wk of pregnancy
Nutrition	Often inadequate protein intake (less than 55 gm/day)	Usually adequate diet
Social economic status	Often poor	All groups
Rollover test	Positive	Negative
Vascular reactivity	Hyperreactive	No change
After pregnancy	Clears with no residuals (should be normal by 6 wk post partum)	May improve slightly, but hypertension persists

Definitions

"Chronic hypertension" is a descriptive term that implies any hypertensive disease antedating pregnancy. It also includes latent essential hypertension which may manifest itself for the first time during pregnancy. A simple classification of hypertension in pregnancy is given in Table 3.

Hypertension is arbitrarily diagnosed if there is a sustained elevation of the arterial blood pressure $\geq$ 140/90 mm Hg. There are, however, age and race criteria to modify the normal range.[4] Also, in pregnancy, with the normal 2d-trimester decrease in blood pressure, a diastolic blood pressure > 80 mm Hg may be defined as elevated.

Systolic hypertension, with normal diastolic blood pressure, generally reflects high cardiac output states, e.g., thyrotoxicosis, and has traditionally implied less morbidity than diastolic hypertension. However, long-term studies in nonpregnant populations have emphasized the importance of systolic hypertension in the production of end-organ damage.[5] It has been our impression that systolic hypertension is a sign of environmental stress and indirectly relates to the lability of blood pressure in a given person. This can be used as an indicator of vascular reactivity and should alert the clinician to possible future problems. More importantly, the elevated systolic blood pressure can also be correlated (as can the diastolic blood pressure) with increased fetal mortality rates.

Probably most important is the *mean* arterial blood pressure to which blood vessels, organs and the placenta are subjected due to perfusion. One study has shown a continuous increase in perinatal mortality as mean arterial pressure increases.[6] Unfortunately, the use of mean arterial blood pressure has never found favor with clinicians because it is a calculated rather than a manometric value.

Hypertension can be classified qualitatively as mild, moderate or severe, depending on absolute blood pressure readings along with evidence of end-organ damage. Although classifications of severity differ among authors, generally there is agreement as to what represents "mild" or "severe" forms of the disease (Table 4).

Our classification (Table 3) of hypertensive disease in pregnancy is purposefully brief. Whereas other authors have more extensive classifications,[9, 10] this one includes the most common causes of hyperten-

TABLE 3.—HYPERTENSIVE DISEASES IN PREGNANCY

I. Pregnancy-induced hypertension (preeclampsia-eclampsia; toxemia; acute hypertension)
II. Chronic hypertensive disease
  A. Primary (essential; idiopathic)
  B. Secondary (to some known cause)
    1. renal, e.g., parenchymal (glomerulonephritis, chronic pyelonephritis, interstitial nephritis, polycystic kidney); renovascular
    2. adrenal gland: cortical—Cushing's disease, hyperaldosteronism; medullary—pheochromocytoma
    3. Other: coarctation of aorta, thyrotoxicosis, etc.
III. Chronic hypertensive disease with superimposed PIH
IV. Transient (occurs during labor or immediately post partum)

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