70

Women's Health Topics

Kelly McGarry, Kimberly Babb, Laura Edmonds, Christine Duffy, Michelle Anvar, and Jennifer Jeremiah

THE SPECIALTY OF WOMEN'S HEALTH

The specialty of women's health grew out of the recognition that differences in the biology of men and women are responsible for differences in the prevalence, presentation, and management of some diseases. The focus of women's health is on conditions unique to women (e.g., pregnancy), conditions that are more common in women (e.g., breast cancer, osteoporosis, some rheumatologic diseases), and conditions that have different presentations, natural history, risk factors, and prevention or treatment strategies in women and men (e.g., heart disease, sexually transmitted infections, urinary tract infections). Specialists in this area come from all disciplines and include obstetrician-gynecologists, general internists, subspecialty internists, family medicine, radiologists, and surgeons. In this chapter, we focus on medical issues unique to women and highlight what is known about gender differences in common diseases. For more detailed discussions of specific topics, please refer to the appropriate chapters in this edition of *Cecil Essentials of Medicine* and the 25th edition of *Goldman-Cecil Medicine.*

WHAT MAKES WOMEN DIFFERENT FROM MEN?

There are substantial biologic, physiologic, and psychosocial differences between men and women. Although we have an in-depth understanding of some of the differences, others are just beginning to be elucidated, and still others remain undiscovered.

Women tend to be physically smaller than men. Women have less renal mass, and defining normal renal function takes this into account. Women typically have a 15% lower creatinine clearance rate than men with the same level of creatinine. The volume of muscle and fat varies by gender and age, which affects the metabolism of medications and estimates of kidney function. Women have smaller blood vessels than men. Until smaller intravascular catheters were created, this biologic difference made cardiac catheterizations in women technically more challenging.

Gender also influences treatment. A study of more than 700 physicians presented with several hypothetical patient scenarios found that the race and sex of a patient independently influenced how physicians managed chest pain. Women, particularly black women, were significantly less likely to be referred for catheterization than white men.

Differences in physiology affect biologic responses. For example, to increase cardiac output, women increase heart rate, whereas men increase stroke volume, in part by increasing vascular resistance. These physiologic differences may have different pathophysiologic consequences for men and women. Sympathetic tone varies by gender. Women have reduced sympathetic activity and enhanced parasympathetic activity compared with men. This may be one reason that premenopausal women tend to have lower blood pressure than age-matched men and why women may be more susceptible to orthostatic hypotension and fainting than men.

Hepatic drug clearance varies by gender, ethnicity, and race. Gender-related differences in pharmacokinetics in part determine the clinical effectiveness and potential adverse effects of drug therapy. Physiologic differences include the usually lower body weight and organ size, higher percentage of body fat, lower glomerular filtration rate, and different gastric motility in women compared with men. Molecular differences involve drug transporters and drug-metabolizing enzymes. Clinically important gender differences in pharmacodynamic processes include risk of QT prolongation, which can lead to a potentially fatal ventricular arrhythmia, torsades de pointes. A much higher percentage of women than men develop torsades after taking a variety of drugs, including certain antibiotics, antiarrhythmics, and antipsychotics. In addition to differences in drug transport and metabolism that result in different plasma and intracellular drug levels, the baseline electrocardiographic rate of corrected QT interval (QTc) is naturally longer in women than in men. Because there are gender differences in the rate of cardiac repolarization, drugs that are known to prolong the QTc interval should be carefully prescribed and monitored.

The approach to menstrual disorders is guided by an understanding of the physiology of reproduction. Estrogen levels vary substantially throughout life. With the onset of puberty, the hypothalamus begins releasing gonadotropin-releasing hormone (GnRH), leading to ovarian stimulation. The normal menstrual cycle requires precise regulation and feedback of hormones involving the hypothalamus, pituitary gland, and ovaries, with the uterus acting as an end organ for ovarian steroid effects. The menstrual cycle consists of the follicular or proliferative phase, ovulation, and the luteal or secretory phase. The physiologic changes that define the menstrual cycle, including variations in hormones, the uterine lining, and basal body temperature (taken on awakening), are graphically represented in Figure 70-1.

During the follicular phase, the hypothalamus secretes GnRH, which stimulates the pituitary to release gonadotropins, luteinizing hormone (LH), and follicle-stimulating hormone (FSH). LH and FSH then stimulate ovarian follicular development and estrogen secretion. Estrogen secretion results in proliferation of the endometrium. Eventually, one follicle with its oocyte becomes dominant, and maturation results in ovulation, which occurs soon after an LH surge. With ovulation, the oocyte leaves the dominant follicle and migrates toward the fallopian tube. The