

# Risk of Metabolic Syndrome, Cardiovascular Disease, and Diabetes in Androgen Deprivation Therapy

Yvonne Leahy, RN

Men with prostate cancer may be at increased risk for metabolic syndrome, cardiovascular disease, and diabetes from androgen deprivation therapy (ADT). This article reviews current literature related to potential adverse effects of using ADT for localized prostate cancer. The use of gonadotropin-releasing hormone agonist therapy for prostate cancer in the early 1990s compared to the late 1990s is addressed. Oncology nurses play an important role in educating men about strategies for preventing and reducing side effects of cancer treatment. Therefore, having knowledge regarding the impact of hormone therapy on men's health will be important to prostate cancer survivors.

**P**rostate cancer is the most frequently diagnosed malignancy in men. In the United States, an estimated 186,320 men will be diagnosed with this type of cancer in 2008. The vast majority of these men are older than 64. Incidence rates are significantly higher for African Americans compared to whites (Ries, Melbert, Krapcho, Stinchcomb, Howlader, Horner, et al., 2007). Men with a strong family history (e.g., with two or more first-degree relatives) of prostate cancer are considered high risk (Bratt, 2002). Approximately 86% of men with prostate cancer are diagnosed with localized disease; those men can expect a five-year relative survival rate of almost 100% (Surveillance, Epidemiology, and End Results [SEER] Program, 2007).

Hormone therapy or androgen deprivation therapy (ADT), either gonadotropin-releasing hormone (GnRH) agonists (see Figure 1) or bilateral orchiectomy, is used in the treatment of high-risk localized prostate cancer (Shahinian, Kuo, Freeman, Orihuela & Goodwin, 2005). The goal of ADT is to control prostate cancer by shrinking or slowing the growth of the tumor (Cooperberg, Grossfeld, Lubeck, & Carroll, 2003). The National Comprehensive Cancer Network (NCCN), 2008 practice guidelines for treating high-risk localized prostate cancer (clinical stage Ta3, Gleason score 8–10, or prostate-specific antigen > 20 ng/ml) is ADT for at least two to three years plus radiation therapy, radiation therapy with or without neoadjuvant and concurrent short-term (four to six months) ADT for selected patients, or radical prostatectomy for selected patients. Grades of a prostate cancer tumors are described in Table 1.

## Gonadotropin-Releasing Hormone Agonist Therapy

Approximately 33% of prostate cancer survivors in the United States currently receive a GnRH agonists (Smith, 2007). Not long

### At a Glance

- ◆ Localized prostate cancer increasingly is managed with androgen deprivation therapy.
- ◆ Patients who receive hormone therapy for prostate cancer may have an increased risk of developing metabolic syndrome, cardiovascular disease, and diabetes early in the treatment period.
- ◆ Educating men about potential adverse effects of using hormone therapy for prostate cancer is vital.

ago, this type of ADT was used mainly for metastatic disease (Smith). More recently, GnRH agonist therapy has become part of a management plan for many men with localized prostate cancer (Cooperberg et al., 2003).

A population-based study examined the use of a GnRH agonist in more than 100,000 older adult men with prostate cancer during the 1990s using statistics from the SEER Medicare database (Shahinian et al., 2005). Men with localized prostate cancer represented 36% of the study population, whereas locally advanced or metastatic disease accounted for 21%. In the study, GnRH agonist therapy was initiated within six months of diagnosis and the mean number of doses received was 11.9. The 30% increase in GnRH agonist use was evident for localized and locally advanced

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