Prostate cancer is the most frequently diagnosed malignancy and the second-leading cause of cancer death in men (American Cancer Society [ACS], 2007). In 2007, an estimated 218,890 new cases of prostate cancer will occur in the United States, with an estimated 27,050 deaths (ACS, 2007). The five-year relative survival rate for all stages of prostate cancer combined has increased to nearly 100%, and the 10-year relative survival rate for all stages of prostate cancer combined is 93% (ACS, 2007). Treatment decisions related to the diagnosis of prostate cancer are different. Local therapies include retropubic radical prostatectomy (RRP), laparoscopic prostatectomy, cryosurgery, radiation with conformal external beam radiation, brachytherapy (seed implants), and a watch-and-wait approach. Treatment decisions are based on patients' age, comorbidities, access to treatment, stage and grade of the tumor, and preference (Cohen & Jaskulsky, 2001). This article will focus on one patient and the evolution of his disease, from his initial diagnosis through the different stages of his prostate cancer, revealing the chronic nature of the disease and the comprehensive medical management required.

Case Study

Mr. C, a 69-year-old man, had an 8.0 ng/ml prostate-specific antigen (PSA) level at the time of diagnosis. His prostate biopsy revealed adenocarcinoma, consistent with prostate cancer. He was an otherwise healthy individual with a medical history of hypertension, controlled with lotensin 20 mg daily, and hypercholesterolemia, controlled with Lipitor® (Pfizer Inc.) 20 mg daily. Mr. C was married with two grown children. A retired math teacher, he and his wife remained active in a retirement community.

After his biopsy confirmed prostate cancer, Mr. C was seen by a urologist and radiation oncologist to discuss treatment. Mr. C chose to pursue RRP. The surgeon informed Mr. C that the frequency of RRP side effects varies depending on surgical technique. Reported prevalence rates of urinary incontinence vary from 15%–60%. Erectile dysfunction is estimated in 50%–90% of patients, although the rates are lower with the nerve-sparing procedure (Kendirci, Bejma, & Hellstrom, 2006). Urinary incontinence tends to improve with time, declining and leveling off within one to two years after surgery; however, some men experience incontinence that persists for years (Bhatnagar & Kaplan, 2005). According to the research, strengthening the pelvic floor muscles significantly improves postprostatectomy urinary continence, postmicturition dribble, and erectile function (Dorey, 2005).

An advanced practice nurse (APN), working in collaboration with the surgeon, arranged meetings before and after surgery to...
Mr. C requested resources on complementary and alternative therapies, which were supplied by the APN and medical oncologist (see Figure 1). As a result of that discussion, Mr. C began to drink an 8 oz glass of pomegranate juice daily and opted to watch and wait. His PSA was stable for the next three months before rising to 7.5 ng/ml. Mr. C decided to take part in a clinical trial at the cancer center and was on the trial for six months. The trial was a phase II metronomic dosing of etoposide and cyclophosphamide for stage D0 prostate cancer. His PSA remained relatively stable throughout, but by the sixth month, his PSA had risen to 9.2 ng/ml. A bone scan revealed a sclerotic lesion in his right sixth anterior rib. A computed axial tomography scan of the abdomen and pelvis was negative for evidence of disease. An x-ray of the rib was not definitive for a metastatic site; review pelvic floor exercises and to assess Mr. C’s progress. In addition, the APN arranged for Mr. C and his wife to meet with a social worker in the cancer center to discuss support groups and education opportunities. Both were receptive to support group meetings and networking opportunities.

An important aspect of Mr. C’s care was addressing his spouse’s concerns and questions. Evidence indicates that partners may experience higher levels of distress than patients. They are affected by the side effects of incontinence and sexual dysfunction and, as caregivers, feel anxiety and uncertainty about the future (Resendes & McCorkle, 2006).

Mr. C’s surgery went well, and pathology confirmed adenocarcinoma, Gleason score of 7. The Gleason score is the standard grading system for prostate cancer in the United States (Lilleby, Torlakovic, Torlakovic, Skovlund, & Fossa, 2001). The Gleason score recognizes prostate carcinoma grades based on architectural tumor growth patterns and combines two assigned grades into a score ranging from 2–10 (Lilleby et al.). A tumor with well-differentiated cells would have a score of 2, 3, or 4 and be classified as low grade. A tumor with moderately differentiated cells would be scored as a 5, 6, or 7 and would be a moderate grade. A tumor with poorly differentiated cells would be scored as an 8, 9, or 10 and would be a high grade. High-grade tumors usually are more aggressive and life threatening (Albertsen, Hanley, Gleason, & Barry, 1998). In addition, Mr. C’s pathology revealed negative margins, negative seminal vesicle involvement, and negative lymph nodes.

After surgery, Mr. C experienced stress incontinence but noted that the pelvic floor exercises were helping. By six months, he experienced only a mild stress incontinence requiring a pad. He continued to have erectile dysfunction and was put on a trial of Cialis® (Eli Lilly and Company). Mr. C’s PSA decreased to a low (nadir) of 0.2 ng/ml, and he had a repeat PSA screening every three months. His PSA began to rise 22 months later, with a recorded value of 0.6 ng/ml. Another test 1 month later was 0.8 ng/ml. Mr. C was referred to a medical oncologist and was sent for a bone scan and a computed axial tomography scan of the abdomen and pelvis. Metastatic disease was not present, so several recommendations were offered, including a continued watch-and-wait approach and an opportunity to participate in a clinical trial. Mr. C also had the option of hormonal therapy, but with a PSA of 0.8 ng/ml and no evidence of disease, hormonal therapy was not recommended.

A controversial topic in prostate cancer treatment is the timing of the initiation of hormonal therapy for biochemical progression (Faria et al., 2006). Patients often are treated with early introduction of hormonal therapy, but no convincing evidence supports that approach. In addition, with the initiation of hormonal therapy, the side effects and cost to the patient are significant (Faria et al.). Despite a primary response rate of 80%–90% with hormonal ablation, almost all patients advance to a state of androgen resistance manifested by increasing PSA levels, new lesions on bone scans, and worsening symptoms (Rashid & Chaudhary, 2004). Randomized, controlled trials are needed to assess the best timing for the initiation of androgen ablation for the stage D0 (i.e., rising PSA but no evidence of disease) prostate cancer population (Tatip, 2003).

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Figure 1. Complementary and Alternative Therapies Used in Patients With Prostate Cancer
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• **Pomegranate:** A recent research study sought to determine the effects of pomegranate juice (a major source of antioxidants) consumption in men with a rising prostate-specific antigen (PSA) following primary surgery or radiotherapy. Eligible patients had a detectable PSA greater than 0.2 ng/ml and less than 5 ng/ml and a Gleason score of 7 or less. Forty-six patients were given 8 oz of pomegranate juice daily until disease progression. Clinical end points included safety and effect on serum PSA, serum-induced proliferation, and apoptosis of LNCaP cells. LNCaP cells are prostate cancer cell lines that originate from a metastatic lymph node lesion of human prostatic adenocarcinoma (Vaarakala et al., 1998). No serious adverse events were reported, and the treatment was well tolerated. Mean PSA doubling time significantly lengthened with pomegranate treatment from a mean of 15 months at baseline to 54 months after treatment (p < 0.001)(Pantuck et al., 2006).

• **Lycopene:** This carotenoid is found in tomatoes. Clinical trials have reported mixed results until more clinical trials can be performed, benefit cannot be predicted (Rackley, Clark, & Hall, 2006).

• **Selenium and vitamin E:** The Selenium and Vitamin E Cancer Prevention Trial is a research study to determine whether selenium and vitamin E can help prevent prostate cancer. The study has randomized more than 35,000 men to receive selenium, vitamin E, both, or placebo. The trial results are expected in 2013 (Rackley et al., 2006).

• **Vitamin D:** This vitamin is acquired in the diet or synthesized in the skin from ultraviolet light. Calcitriol, a form of vitamin D, has been shown to arrest the G0/G1 phase of meiosis, inhibit angiogenesis, and induce apoptosis; however, calcitriol therapy can cause hypercalcemia. Clinical trials are ongoing to examine that complication (Rackley et al., 2006).
therefore, Mr. C underwent a biopsy of the rib area, confirming adenocarcinoma consistent with prostate cancer.

Hormonal Therapy

Mr. C and his wife discussed hormonal therapy as well as its schedule and side effects with the medical oncologist and the APN. Hormonal therapy is associated with loss of libido, erectile dysfunction, hot flashes, anemia, fatigue, loss of muscle mass, weight gain, and osteopenia (Brawer, 2006). A study assessing short- and long-term hormonal therapy revealed lower quality of life in terms of physical function and general health compared to healthy controls as assessed by a health-related quality-of-life survey, but no statistically significant difference was found between social function or emotional or mental health when comparing patients on hormonal therapy and healthy controls (Dacal, Sereika, & Greenspan, 2006).

Hormonal therapy was initiated with leuprolide acetate 22.5 mg intramuscularly every 12 weeks, and Mr. C received bicalutamide, an antiandrogen, for one month to prevent flare phenomenon, which is caused by a surge of luteinizing hormone and follicle-stimulating hormone release with a corresponding increase in testosterone levels. The testosterone surge can result in a transient increase in prostate cancer growth. Some patients experience worsening bone pain, urinary obstruction, or other symptoms attributable to rapid cancer growth (Hellerstedt & Pienta, 2002). Continued use of leuprolide acetate inhibits gonadotropin secretion, causing castrate levels of testosterone. Mr. C responded to hormonal therapy, and within one month, his PSA had decreased to 4.0 ng/ml. One month later, it was 1.9 ng/ml. His nadir PSA, 0.6 ng/ml, occurred at three months.

Symptoms: Mr. C stated that, overall, he was tolerating hormonal therapy well, experiencing mild hot flashes and fatigue, but was upset with his five-pound weight gain. The APN reviewed a previous discussion on nutrition, caloric intake, and the importance of an exercise program, including walking, swimming, and lifting weights. The APN arranged for Mr. C to visit a nutritionist.

Mr. C was experiencing erectile dysfunction; the Cialis that previously was prescribed was not helping. The urologist instructed the patient on how to administer an alprostadil injection, a naturally occurring form of prostaglandin E1 that induces erection by relaxation of trabecular smooth muscle and by dilation of cavernosal arteries.

Mr. C’s follow-up every three months included a clinic evaluation, lupron injection, and blood work, including a PSA test. In addition, Mr. C and his wife continued to participate in a support group at the center. He did well and remained asymptomatic for three years.

During a routine visit, Mr. C complained of lower back pain. He reported the pain as 6 out of 10 on the numeric rating scale, a written pain scale Mr. C completed at each visit. His pain was not responding to acetaminophen or nonsteroidal anti-inflammatory drugs. A magnetic resonance imaging scan of the thoracic-lumbar spine revealed a sclerotic lesion in T10 but no epidural disease or cord compression. Mr. C was started on oxycodone 5 mg by mouth every four hours as needed, and a bowel regimen was reviewed because of the high likelihood of constipation related to his pain regimen. Mr. C was seen by radiation oncology, and a course of radiation therapy was planned to irradiate T10.

Pain Management

A significant issue with the metastatic prostate cancer population is pain. Pain is a complex experience, affecting physical, mental, social, and behavioral processes that compromise quality of life (Social Security Administration, 1987). The National Comprehensive Cancer Network (2007) provides guidelines for cancer pain management, which is an important area for nursing research. Pain measurement tools are available that are valid in measuring outcomes in an individual practice. For example, a numeric rating scale, a verbal rating scale, the Faces Scale, and the Brief Pain Inventory (Ware, Epps, Herr, & Packard, 2006) can be used. When managing the metastatic prostate cancer population, APNs should measure pain management outcomes with the most appropriate tools, document their contributions, and assess their individual pain management practices.

Mr. C tolerated radiation therapy well, and his pain improved. He continued with oxycodone 5 mg as needed but was able to taper off as pain diminished. After radiation, his PSA decreased, so additional treatments were not initiated immediately. He came in for monthly clinic evaluations and PSA blood work. Future options were introduced, including the standard chemotherapy for hormone-refractory prostate cancer, docetaxel (Tannock et al., 2004). The regimen and its side effects were reviewed.

Disease Progression

Approximately eight weeks after the radiation, a baseline computed axial tomography scan of the abdomen and pelvis and a bone scan were obtained, revealing several new sclerotic lesions in the pelvis and thoracic spine. Mr. C enrolled in a clinical trial that included docetaxel as part of its regimen. The quality-of-life study included the Functional Assessment of Cancer Therapy (FACT) questionnaires, specifically the FACT-P (prostate cancer) assessment instrument (Esper et al., 1997). The Functional Assessment of Chronic Illness Therapy (FACIT) questionnaires, which include the FACT subcategory, measure health-related quality of life in people with chronic illness. The APN educated Mr. C on the regimen and its side effects. Mr. C received therapy every three weeks and continued on this chemotherapy for eight months. During that time, he developed anemia and, after about four months of therapy, required epoetin alfa 40,000 units subcutaneously weekly (Gabrilove et al., 2001). He developed hair...
loss, loss of appetite, fatigue, and a very mild neurotoxicity of his fingertips related to the docetaxel chemotherapy that did not affect activities of daily living.

After eight months, his prostate cancer progressed further in the bone and discussions continued regarding clinical trials, including phase I options. Mr. C continued on different chemotherapeutic regimens over a three-month period. Eventually, as he had explored all available treatment options and his Karnofsky performance status declined to 50%, Mr. C decided to end chemotherapy and instead focus on comfort measures. Current National Institute for Health and Clinical Excellence (2004) guidelines for urologic cancers recommend providing palliative care for all patients with prostate cancer. Palliative care, as defined by the World Health Organization (2006), is the active total care of patients whose disease is not responding to treatment. Mr. C’s palliative care had begun when he was found to have metastatic disease and therefore was no longer curable. Nurses entered a new phase of his care. Palliative care deals with comfort measures; assessment of medication regimens, including the elimination of all unnecessary medications; and evaluation of the religious and spiritual needs of the patient and family. In addition, the goal of care includes good communication with the patient and family and among the healthcare team (Ellershaw & Ward, 2003).

A meeting was scheduled with Mr. C, his family, and the healthcare team to develop a plan of care. The group decided to initiate home hospice services, which required the family to accept Mr. C’s terminal status, an often difficult transition for families (Schuman-Green et al., 2004). The ACS (2006) has defined hospice as a philosophy of care that recognizes death as the final stage of life. Hospice seeks to enable patients to continue an alert, pain-free life and manage symptoms so that the last days are spent with dignity and quality, surrounded by loved ones (ACS, 2006). Home hospice was arranged for Mr. C by the APN, and close follow-up with Mr. C, the hospice nurse, and the healthcare team ensued. A dignity-conserving care approach was undertaken, which encompassed interventions to reduce distress and required the healthcare providers to understand how the patient and family defined dignity (Chochinov, 2002). Chochinov (p. 2259) stated, “When dying patients are seen, and know that they are seen as being worthy of honor and esteem by those who care for them, dignity is more likely to be maintained. In turn, caregivers are imbued with the dignity rendered by their actions, better enabling them to provide care and comfort to those nearing death.”

Conclusion

Prostate cancer requires a multidisciplinary approach to care, with a team that includes a medical oncologist, a urologist, a radiation oncologist, nurses, a social worker, and often a nutritionist. The team members must communicate with each other, and the patient and family should know that everyone is on the same page in regards to their plan of care. Prostate cancer is a chronic illness that requires a patient to make difficult decisions during the course of his disease. As Mr. C encountered, many treatment options are available. Often, no right or wrong answer exists during the decision-making process. Healthcare professionals must ensure that the decisions made by the patient are informed and that supportive measures required to assist the patient and family are provided.

References


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