Metastatic Prostate Cancer: Quality of Life and Cost Considerations

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The pharmacoeconomics of patient management is important in the case of the critically ill. Pain palliation and improvements to quality of life are treatment goals for patients with metastatic prostate cancer and can actually

Introduction

Spiraling health care costs have prompted great interest in evaluating the pharmacoeconomics of all medical treatments [1]. As a result of careful analyses, it has been suggested that the most cost-effective approach to therapy may not necessarily be the least expensive but rather the one that provides the best clinical outcome. Length of hospitalization and incidence of adverse effects or disease complications all exert a major influence on the cost-effectiveness of management strategies. This type of pharmacoeconomic treatment evaluation is particularly important in the case of the critically ill, who typically require longer hospital stays and more intensive treatments than other patients.

Patients with advanced metastatic prostate cancer are certainly included in this population. Their expected survival is approximately 2 years and is substantially less by the time the disease becomes refractory to first-line hormonal therapy [2]. At that point, the treatment of bony metastases, which occur in 85% of these patients, is difficult, and excruciating pain along with a substantially decreased quality of life result [3,4].

The principal goals of therapy are pain palliation and maintenance of daily functioning. Patients with adequately controlled pain not only experience a dramatically improved quality of life, but require fewer medical services and hospitalizations, which can translate into increased cost-effectiveness.

Management Options

Management options include cytotoxic chemotherapy, opiate analgesia, radiotherapy, and treatment with the systemic radiopharmaceutical, strontium-89 (Sr-89, Metastron). The clinical benefit of chemotherapy is under question, especially in terms of pain palliation [2,3]. Opiates certainly play a role in pain relief, but their use can be complicated by sedation, adverse gastro-intestinal effects, and drug tolerance [4].

It is well established that both local and hemibody irradiation (HBI) represent effective first-line treatments for the pain of advanced prostate cancer [3-6]. Recently, Sr-89 for intravenous injection has been made available as another option for pain palliation. Accumulating efficacy data indicate that external beam radiotherapy and Sr-89 therapy provide similar overall clinical response rates (nearly 80%) and no significant differences in the prolongation of survival have been reported.

However, local radiotherapy is not useful in cases of multiple metastases and HBI is associated with significant bone marrow and lung toxicity. In contrast, Sr-89 is associated with minimal adverse effects, and, either as an adjunct to radiotherapy or as monotherapy, provides clinical benefits above and beyond external beam irradiation [5,6].

Comparative data reveal that Sr-89 retards prostate cancer progression (as measured by the appearance of new sites of pain) in a greater proportion of patients than either local irradiation or HBI (P less than 0.05) [6]. This effect translates into substantially lower requirements for additional radiotherapy. When given concomitantly with local field radiotherapy (ie, the TransCanada study), Sr-89 also has been shown to significantly improve quality of life (P = 0.006) and reduce analgesic consumption (P less than 0.05) compared with irradiation alone [5].

Pharmacoeconomics of Treatment With Sr-89
The direct reduction of drug requirements and medical services combined with the outpatient administration of Sr-89 should have a positive impact on the pharmacoeconomics of prostate cancer patient management [4,5]. This possibility was explored retrospectively using a subset of 29 patients from the Edmonton, Alberta area who participated in the TransCanada study. This phase III trial (the results of which have been published elsewhere) compared the efficacy of local irradiation (20 Gy/5 fractions or 30 Gy/10 fractions) plus placebo (n = 15) or Sr-89 (10.8 mCi) (n = 14). The aims of the analysis were to define the cost components and calculate direct and indirect patient management costs for these patients with advanced metastatic disease. In addition, the costs of management per week of survival and per patient lifetime were also assessed for each treatment arm of the study.

**Patients and Methods**—A subset of 29 patients from the TransCanada study [5] were included in the study (Table 1). Although the analgesic score was slightly higher and the Karnofsky status slightly lower in the Sr-89 group, the median survival was similar. In contrast, the median length of hospitalization was substantially shorter (21.9 days) for Sr-89-treated patients compared with those receiving radiotherapy alone (37.5 days).

The methods employed in the analysis were chart review, review of TransCanada study data, follow-up correspondence to attending physicians, and the collation of management requirements. The costs of selected components of direct and indirect routine management of Canadian patients with prostate cancer that were used in the analysis are presented in Table 2. Other direct costs of care included in the study were radiotherapy and blood transfusions. Data were tabulated and compared for patients receiving placebo/radiotherapy or Sr-89/radiotherapy.

**Results**—Although the indirect cost of managing patients throughout the study were similar in both treatment groups, the direct costs associated with care of the Sr-89-treated patient group were substantially less (by nearly $29,000) than those required for the group of patients receiving local irradiation alone ($44,174 vs $73,130, Table 3). Combined with a 38% reduction in the cost of tertiary care, the overall costs of managing the Sr-89 group were 35% less than the placebo group ($231,987 vs $355,313). Similarly, direct costs per patient and per week of survival were reduced by approximately 35% to 40% with the addition of Sr-89 to radiotherapy. This translated into a per patient treatment savings of over $7,000 (Can) as well as a decrease of $209 (Can) in management costs per week of survival with the addition of Sr-89 to standard local irradiation protocols. The results of this study provide evidence for the overall cost-efficacy of Sr-89 therapy and are in agreement with other published reports of clinical experience with this radiopharmaceutical [4,5].

**References:**


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