

Cancer Prevalence in Patients with End-stage Renal Disease

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Introduction

- As of January 1, 2002, 10.1 million patients, representing approximately 3.4% of the US population, had survived cancer.
- The diagnosis rate of cancer has recently increased in both the United States and Europe.
- It is unclear if these increased cancer rates represents a true increase or are a result of increased recognition.
- Since cancers (in the kidney or other organ systems) may predispose patients to subsequent ESRD, and may have an impact on the survival of the dialysis population, we chose to study cancer as a prevalent condition at initiation of ESRD to determine if trends similar to those found in the general population are also found in the ESRD population.

Methods

- We used US Renal Data System ESRD incident data from 1998-2002.
- Participants were entitled to Medicare for at least two years before the initiation of ESRD treatment, and were covered by both Parts A and B insurance.
- Using ICD-9-CM diagnosis codes, Medicare claims for at least two years before the initiation of ESRD treatment were used to identify cancer.
- Cancer was determined by at least one claim from inpatient, outpatient, home health agency, or skilled nursing facility claims files, or at least two claims from physician/supplier claims files.
- Logistic regression was used to determine associations between patient demographic characteristics (age, gender, and race) and cancer.
- Cox regression was used to evaluate death risk related to cancer using age, gender, race, and cancer status as explanatory variables.

Results

- In the study population, 31.0% of ESRD patients had cancer (Table 1).
- A slight increase in the prevalence of cancer was found between 1998 and 2002 (Figure 1).
- High rates of cancer were observed in the following systems and sites (Figure 2):
 - Digestive system (13.6%),
 - Reproductive system (9.0%),
 - Kidneys and urinary tract (4.2%), and,
 - Skeletal system (2.7%).
- Using a logistic regression model adjusted for gender and race, risk for cancer increased with age (Figure 3).
- Men were 36% more likely to have cancer than women (Figure 4).
- Whites were 18% more likely to have cancer than blacks, while other races had the lowest cancer risk (Figure 5).
- Using a Cox regression model adjusted for age, gender, and race, ESRD patients with cancer were 16% more likely to die than those without cancer. Those with cancer in the respiratory and skeletal systems had the highest risk of death (Figure 6).

Table 1. Prevalence of cancer at initiation of renal replacement therapy

Age	No. of patients	% of patients	Prevalence of cancer, %
Overall	236,009	100.0	31.0
18-64 yrs	48,321	20.5	16.7
65-70 yrs	48,526	20.6	28.2
71-75 yrs	40,855	17.3	34.6
76-80 yrs	45,908	19.5	37.4
81+ yrs	43,399	18.4	39.2
Gender			
Men	122,677	52.0	33.9
Women	113,332	48.0	27.9
Race			
White	166,517	70.6	33.3
Black	59,253	25.1	26.0
Other	10,239	4.3	22.6

Figure 1. Prevalence of cancer between 1998 and 2002. The lower rate of cancer in 1998 may be just be attributable to incomplete data during the pre-ESRD period.

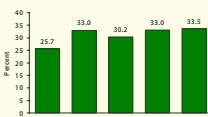


Figure 2. Prevalence of selected cancers, by site.

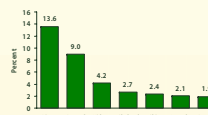


Figure 3. Odds ratios for cancer by age (Ref: age 18-64 yrs) adjusted for gender and race, by logistic regression.

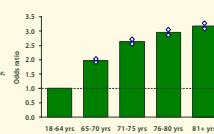


Figure 4. Odds ratios for cancer by gender (Ref: women) adjusted for age and race, by logistic regression.

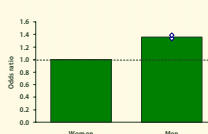


Figure 5. Odds ratios for cancer by race (Ref: blacks) adjusted for age and gender, by logistic regression.

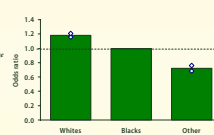
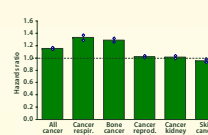


Figure 6. Hazard ratios for death (Ref: patients without cancer) adjusted for age, gender, and race, by Cox regression.



Conclusions

- Approximately one-third of ESRD patients have cancer at the beginning of renal replacement therapy.
- Prevalence of cancer in ESRD incident patients increased slightly between 1998 and 2002. Cancer prevalence in the major organ systems of ESRD patients is different from that reported in the general population.
- Patients of older age, males, and whites are more likely to have cancer.
- ESRD patients with cancer are more likely to die than those without cancer.
- Patients with cancer in the respiratory or skeletal systems have the highest risk of death.