Analysis of clinical characteristics and prognostic factors of elderly patients with renal cell carcinoma based on SEER database

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Abstract

Background: To study the difference of clinical characteristics and prognostic factors from elderly patients with renal cell carcinoma (RCC), the statistical analysis was carried out based on SEER database. Methods: The relevant clinical informations of 19472 RCC patients from 2010 to 2015 were collected, and the differences of clinicopathological characteristics and survival rate was analyzed by log-rank method and Chi square test, respectively. Multivariate Cox regression model was used to explore the independent risk factors affecting the long-term survival of RCC patients. Results: Chi square test showed a significant correlation between older RCC patients with gender ($\chi2 = 89.598$) , race ($\chi2 = 129.889$), TNM stage ($\chi2 = 181.709$), T stage ($\chi2 = 145.253$), and N stage ($\chi2 = 81.859$). Statistics found that the proportion of 65-69-year age group, male, white population in RCC patients was higher than that of other year groups, female, other race, respectively. The median survival time of 19472 RCC patients was 43 months, and 3-year and 5- year survival rate was 75.95 % and 66.62 %, respectively. Univariate survival analysis showed that the survival time was significant correlation with gender ($\chi2 =576.5$), TNM stage ($\chi2 =8206$), T stage ($\chi2 =4097$), N stage ($\chi2 =4849$), and M stage ($\chi2 =6986$). Cox proportional hazards model analysis revealed the independent prognostic factors related with prognosis including TNM stage (HR: 1.527), T stage (HR: 1.044), N stage (HR: 1.334), and M stage (HR: 2.686). Conclusion: Age, TNM stage, T stage, N stage, and M stage are independent prognostic factors for RCC patients, which provides an important basis for the clinical analysis of the prognosis of elderly RCC patients in different ages.

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$\chi^2_{Pearson}(5) = 89.598$, $p = 8.16e\text{-}18$, $\widehat{V}_{Cramer} = 0.066$, $CI_{95\%}$ [0.050, 0.079], $n_{obs} = 19472$

60-64 years	65-69 years	70-74 years

$\chi^2_{gof}(1) = 589.399$, $p = 3.39e\text{-}130$, $n = 4863$ $\chi^2_{gof}(1) = 468.9$, $p = 5.56e\text{-}104$, $n = 5025$ $\chi^2_{gof}(1) = 346.75$, $p = 2.16e\text{-}77$, $n = 3894$

Gender
- Female
- Male

75-79 years	80-84 years	85+ years

$\chi^2_{gof}(1) = 174.708$, $p = 6.93e\text{-}40$, $n = 2959$ $\chi^2_{gof}(1) = 50.557$, $p = 1.16e\text{-}12$, $n = 1804$ $\chi^2_{gof}(1) = 10.15$, $p = 0.001$, $n = 927$

$\chi^2_{Pearson}(10) = 129.889$, $p = 4.92e\text{-}23$, $\widehat{V}_{Cramer} = 0.055$, $CI_{95\%}$ [0.043, 0.063], $n_{obs} = 19472$

60-64 years	65-69 years	70-74 years

$\chi^2_{gof}(2) = 4740.466$, $p = 0$, $n = 4863$ $\chi^2_{gof}(2) = 5175.834$, $p = 0$, $n = 5025$ $\chi^2_{gof}(2) = 4384.374$, $p = 0$, $n = 3894$

Race
- Black
- Other
- White

75-79 years	80-84 years	85+ years

$\chi^2_{gof}(2) = 3403.049$, $p = 0$, $n = 2959$ $\chi^2_{gof}(2) = 2316.726$, $p = 0$, $n = 1804$ $\chi^2_{gof}(2) = 1229.56$, $p = 1.01e\text{-}267$, $n = 927$

$\chi^2_{Pearson}(25) = 41.197$, $p = 0.022$, $\widehat{V}_{Cramer} = 0.013$, $CI_{95\%}$ [0.000, 0.008], $n_{obs} = 19472$

60-64 years	65-69 years	70-74 years

$\chi^2_{gof}(5) = 19.173$, $p = 0.002$, $n = 4863$ $\chi^2_{gof}(5) = 51.211$, $p = 7.83e\text{-}10$, $n = 5025$ $\chi^2_{gof}(5) = 41.815$, $p = 6.42e\text{-}08$, $n = 3894$

75-79 years	80-84 years	85+ years

$\chi^2_{gof}(5) = 13.356$, $p = 0.02$, $n = 2959$ $\chi^2_{gof}(5) = 2.572$, $p = 0.766$, $n = 1804$ $\chi^2_{gof}(5) = 7.337$, $p = 0.197$, $n = 927$

Diagnosis Time
- 2015
- 2012
- 2011
- 2013
- 2014
- 2010

$\chi^2_{Pearson}(15) = 181.709$, $p = 1.08e\text{-}30$, $\widehat{V}_{Cramer} = 0.053$, $CI_{95\%}$ [0.043, 0.059], $n_{obs} = 19472$

60-64 years	65-69 years	70-74 years

$\chi^2_{gof}(3) = 3710.354$, $p = 0$, $n = 4863$ $\chi^2_{gof}(3) = 3706.852$, $p = 0$, $n = 5025$ $\chi^2_{gof}(3) = 2532.868$, $p = 0$, $n = 3894$

75-79 years	80-84 years	85+ years

$\chi^2_{gof}(3) = 1730.472$, $p = 0$, $n = 2959$ $\chi^2_{gof}(3) = 798.417$, $p = 9.54e\text{-}173$, $n = 1804$ $\chi^2_{gof}(3) = 311.529$, $p = 3.18e\text{-}67$, $n = 927$

TNM stage
- IV
- III
- II
- I

3

$\chi^2_{Pearson}(15) = 145.253$, $p = 2.11e-23$, $\widehat{V}_{Cramer} = 0.047$, $CI_{95\%}$ [0.036, 0.053], $n_{obs} = 19472$

60-64 years	65-69 years	70-74 years

$\chi^2_{gof}(3) = 4465.555$, $p = 0$, $n = 4863$ $\chi^2_{gof}(3) = 4478.208$, $p = 0$, $n = 5025$ $\chi^2_{gof}(3) = 3199.746$, $p = 0$, $n = 3894$

75-79 years	80-84 years	85+ years

$\chi^2_{gof}(3) = 2292.475$, $p = 0$, $n = 2959$ $\chi^2_{gof}(3) = 1153.796$, $p = 7.76e-250$, $n = 1804$ $\chi^2_{gof}(3) = 515.567$, $p = 2.02e-111$, $n = 927$

T
- T4
- T3
- T2
- T1

$\chi^2_{Pearson}(20) = 81.859$, $p = 1.89e-09$, $\widehat{V}_{Cramer} = 0.028$, $CI_{95\%}$ [0.015, 0.031], $n_{obs} = 19472$

60-64 years	65-69 years	70-74 years

$\chi^2_{gof}(4) = 16221.22$, $p = 0$, $n = 4863$ $\chi^2_{gof}(4) = 16538.12$, $p = 0$, $n = 5025$ $\chi^2_{gof}(4) = 12961.81$, $p = 0$, $n = 3894$

75-79 years	80-84 years	85+ years

$\chi^2_{gof}(4) = 9594.067$, $p = 0$, $n = 2959$ $\chi^2_{gof}(4) = 5744.936$, $p = 0$, $n = 1804$ $\chi^2_{gof}(4) = 2594.591$, $p = 0$, $n = 927$

N
- N3
- N2
- N1
- NX
- N0

4

$\chi^2_{Pearson}(5) = 19.520$, $p = 0.002$, $\widehat{V}_{Cramer} = 0.027$, $CI_{95\%}$ [0.006, 0.038], $n_{obs} = 19472$

60-64 years	65-69 years	70-74 years

$\chi^2_{gof}(1) = 2877.87$, $p = 0$, $n = 4863$ $\chi^2_{gof}(1) = 3062.672$, $p = 0$, $n = 5025$ $\chi^2_{gof}(1) = 2404.622$, $p = 0$, $n = 3894$

75-79 years	80-84 years	85+ years

$\chi^2_{gof}(1) = 1755.269$, $p = 0$, $n = 2959$ $\chi^2_{gof}(1) = 1031.317$, $p = 2.8e\text{-}226$, $n = 1804$ $\chi^2_{gof}(1) = 440.476$, $p = 8.53e\text{-}98$, $n = 927$

M
M1
M0