

Lung Cancer Treatment: Incidence and Survival: SEER Database

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Abstract

Lung cancer is the most common cause of cancer death worldwide, with an estimated 1.6 million deaths each year. Nearly 85% of cases have a different histological groups jointly recognized as “Non-Small Cell Lung Cancer of which lung adenocarcinoma and lung squamous cell carcinoma are the most common subtypes”.

Keywords: Lung cancer; Non-small cell Lung cancer; Incidence; Mortality; Survival: SEER database

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Introduction

Lung cancer is among the leading causes of cancer in both genders in the U.S. The median five-year survival rate for the cancer is about 5% in the world. There are two main categories of the lung cancer based on their histological characteristics; one is Small Cell Lung Cancer (SCLC) and the other is Non-Small Cell Lung Cancer (NSCLC) [1].

Cancer of the lungs is among the leading causes of cancer in the world. It has two forms; small cell lung cancer (SCLC), and non-small-cell lung cancer (NSCLC). NSCLC constitutes about 85% of cases of lung cancer. Epidermal growth factor receptor (EGFR) and its mutations are found to have an important role in this cancer. Therefore, EGFR tyrosine kinase inhibitors (TKIs) can work effectively against NSCLC. Gefitinib, which is a first generation TKI, and Afatinib, which is a second-generation TKI, are effective as a first-line therapy for advanced NSCLC. Erlotinib is effective as a second-line therapy for advanced NSCLC. However, further studies are required in cases of combination of TKIs with chemotherapeutic agents as some studies show negative outcomes while others show better outcomes. Cases with metastatic NSCLC may be get a resistance to TKIs, and in these patients, the new alternative therapeutic approaches such immunotherapy can help. This paper deals with several aspects of NSCLC, EGFR mutations, TKIs, and their resistance. It also gives future guidelines in the use of TKIs against NSCLC [2].

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The number of new patients of lung cancer was 54.9 per 100,000 male and female annually. The number of mortality was 41.9 per 100,000 male and female annually. These rates are “age-adjusted and based on 2012-2016 cases and deaths”.

According to 2014-2016 SEER database, nearly 6.3% of male and female will be diagnosed with lung malignancy during their life data. In USA, during 2016, there was about 538,243 person had lung cancer (Figure 1).

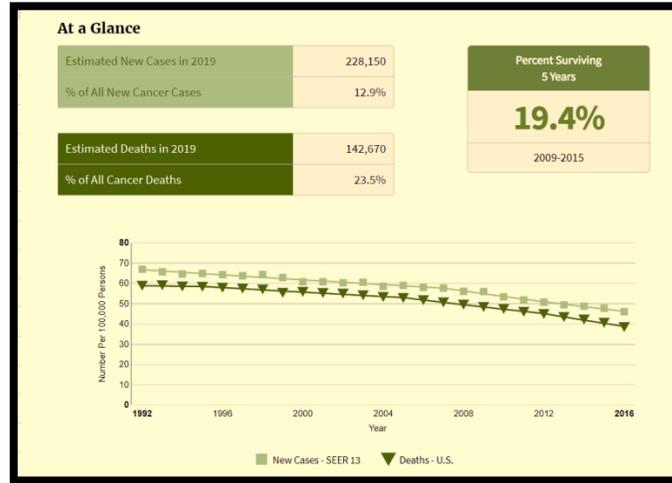


Figure 1: At a glance.

How many patients survive for ≥5 years afterward detected with lung cancer?

Relative survival statistics compare the survival of cases diagnosed with cancer with the survival of cases in the overall people who are “the same age, race, and sex and who have not been identified with malignancies”.

Meanwhile, the survival statistics are generated based on large clusters of people, they cannot be used to expect accurately what will happen to an individual cases (Figure 2).

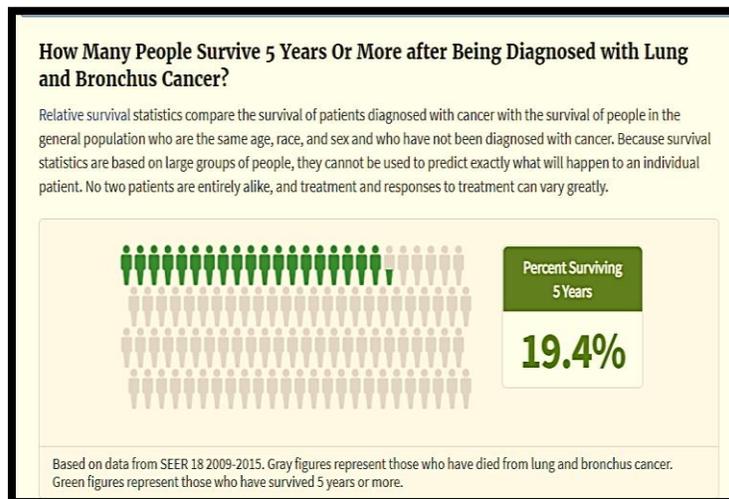


Figure 2: How many people survive 5 years or more after being diagnosed with lung and bronchus cancer?.

The impact of stage on survival outcome

Cancer stage at diagnosis, which mentions the degree of a malignancy in the body, defines treatment choices and has a strong effect on the extent of survival. In universal, if the malignancy is detected only in the part of the body where it started it is localized (sometimes referred to as stage 1).

If it has spread to a different part of the body, the stage is regional or distant. The earlier lung cancer is caught, the well coincidental the case for living for 5-years after actuality identified. About 16.4% are diagnosed with the early stage. The 5-year survival for early stage is about 60% (Figure 3).

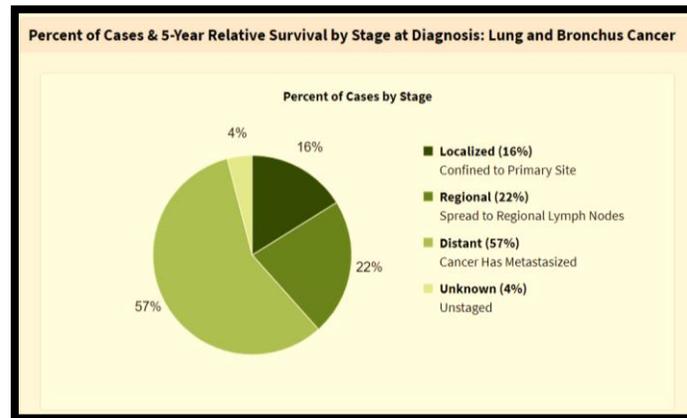


Figure 3: Percent of cases & 5-year relative survival by stage at diagnosis: lung and bronchus cancer.

How common is this cancer?

Matched to other tumours, lung cancer is objectively common. In 2019, it is expected that there will be 228,150 new patients with lung malignancy and an estimated 142,670 cases will die with lung cancer.

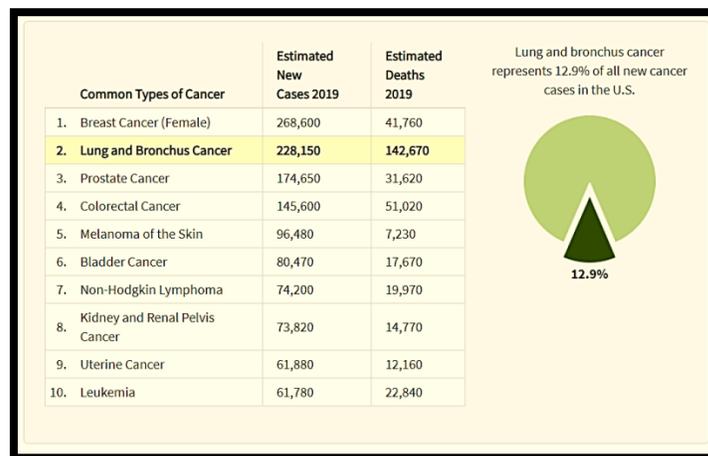


Figure 4: Lung and bronchus cancer represents 12.9% of all new cancer cases in the US.

Lung malignance is more common in male than female, predominantly African-American male. Smoking is extensively documented as the foremost reason of lung tumour. The number of new patients of lung malignance stood about 55/100,000 male and female every year as per 2012-2016 statistics (Figure 5 and Figure 6).

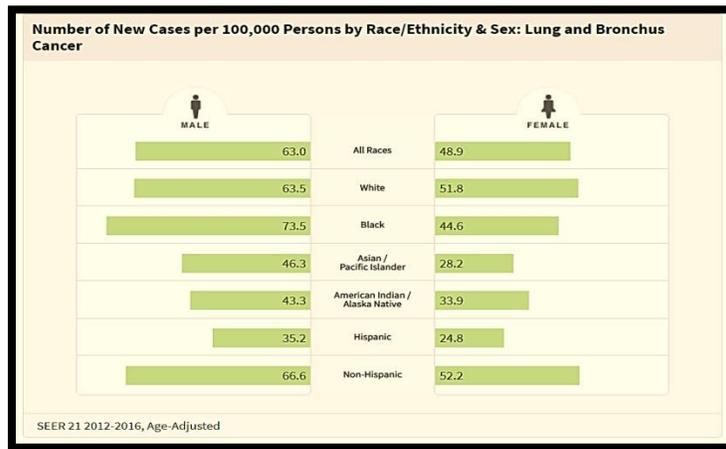


Figure 5: Number of new cases per 100,000 persons by race/ethnicity & sex: lung and bronchus cancer.

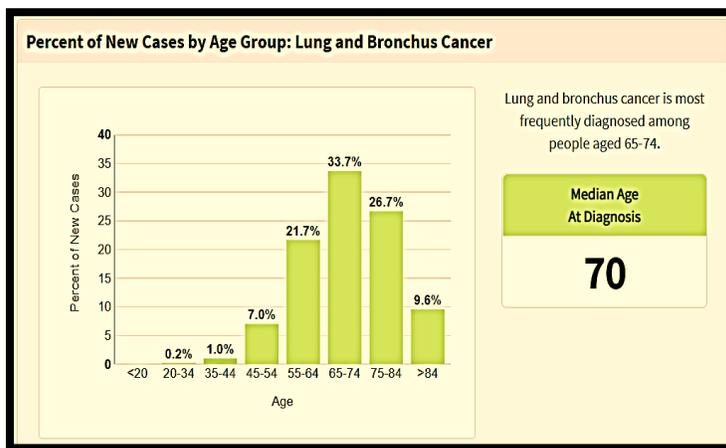


Figure 6: Percent of new cases by age group: lung and bronchus cancer.

Death rates for lung cancer

Death rates for lung tumour are higher between the middle-aged and older peoples. Lung tumour is the 1st leading reason of cancer related mortality in USA. The number of mortality was 42 per 100,000 male and female each year as per 2012-2016 mortality incidences [3].

Nowadays, different lines of treatment for lung cancer based on chemotherapy and target therapy, as well as immunotherapy with good achievement. Epidermal growth factor receptor (EGFR) and its mutations are found to have an important role in this cancer. Thus, EGFR tyrosine kinase inhibitors (TKIs) can act successfully against NSCLC. Gefitinib and Erlotinib, which are a first generation TKI, and Afatinib, which is a second-generation TKI, are effective as a first-line therapy for advanced NSCLC [4]. Although the treatment of patients with metastatic NSCLC has long been considered palliative and in case of patients who is not fit for chemotherapy, before to go to best supportive care, the target therapy is a good choice for the treatment of Metastatic lung cancer with good tolerance and minimal side effect. Furthermore, the use of new therapeutic modalities including immunotherapy may have a role in near future (Figure 7).

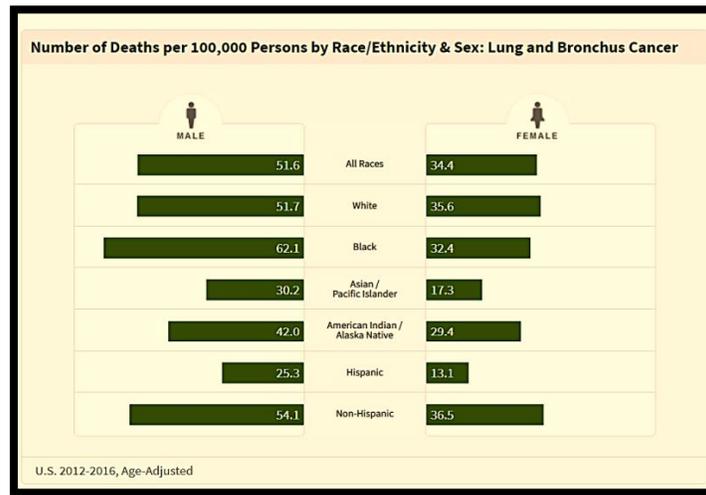


Figure 7: Number of deaths per 100,000 persons by race/ethnicity & sex: lung and bronchus cancer.

Discussion

Lung cancer is a fatal disease with an increasing incidence annually. Previously, the morphological classification before for lung cancer to Small cell and Non-small cell lung cancer had had limited benefits for the management of the patients especially in metastatic status which is reflecting on low Overall survival benefit with maximum 6-9 months only.

In the era of molecular studies, a good flow of data we're getting explaining the heterogeneity of the disease which was allowed to apply the era of personalized therapy for lung cancer patients. The output of this area had good results with extending of the benefit of therapy in the form of extending of OS for metastatic patients up to 24 months.

Nowadays, evolutions of the novel era of immunotherapy add additional survival benefit for the patients with the advanced disease either as first or subsequent lines with yielding survival benefits beyond 2 years.

Conclusion

Lung cancer is an interesting area for research for the oncologist. With more and more research for these patients, the management will get more benefits results to the patient with expected prolongation of PFD.DFS and OS.

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