

Introduction

Lung cancer is the leading cause of cancer-related deaths in the Republic of Ireland (ROI), despite being the fifth most common form of cancer in the country¹.

Common presenting symptoms of cough and dyspnoea are non-specific² and widespread screening is not in place in ROI at the time of writing³. For these reasons most lung cancer cases are diagnosed at an advanced stage, where treatment options are limited and prognosis is poorer².

The *OLOL Hospital Drogheda Rapid Access Lung Cancer Service* continues to operate and accept referrals during the the SARS-CoV-2 pandemic, and has done so for the duration of the pandemic thus far.

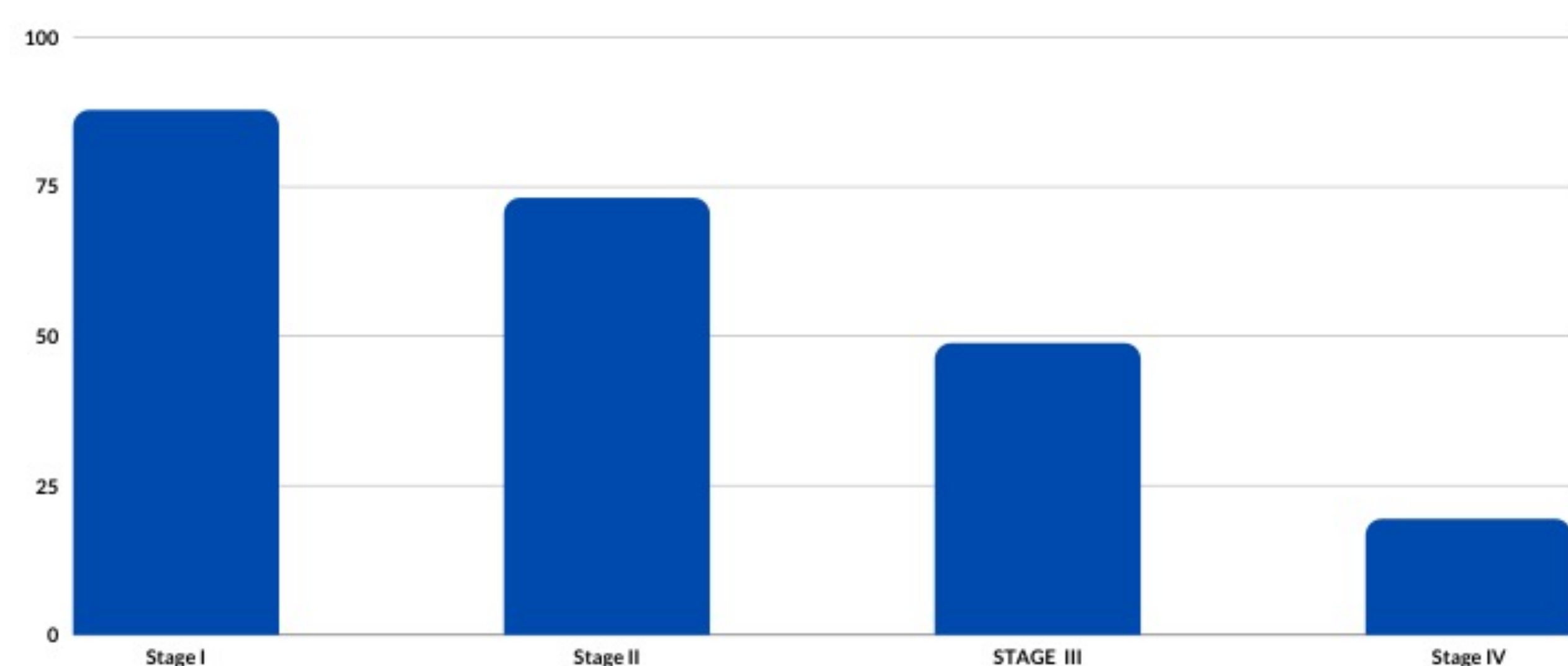


Figure 1: Lung cancer 1-year survival by stage. Long term survival is dramatically reduced by more advanced disease at the time of diagnosis. Adapted from Latimer, K.M., 2018².

Methods

We observed incidence of new diagnoses of lung cancer in *OLOL* in the 'first wave' of the SARS-CoV-2 pandemic between 1 March and 30 June 2020, compared to a reference period of the same dates in 2019.

We performed a retrospective review using a collaborative database of lung cancer diagnoses kept in *OLOL* Hospital to identify new diagnosis during the period in question compared to the reference period in 2019.

We analysed numbers of observed cases by stage, histology and treatment strategy, as well as mean median time from diagnosis to treatment with surgery and to treatment with radiation or chemoradiation in comparison to the previous year.

We aimed to test the hypothesis that during the covid-19 pandemic, avoidance of health services and hospitals by patients would lead to decreased incidence of lung cancer diagnoses within the service, and that reduced scheduled care and closure of services increased delays in treatment for those for whom radical treatment was planned.

Results

During the study period, 38 cases of lung cancer were diagnosed in *OLOL*. This compares to 26 cases in the same time period in the year before, representing an increase of 46.2% (RR = 1.46).

Characteristics of lung cancer diagnoses during the study period in 2020 and the reference period in 2019 are given in the table below.

Findings	2019	2020
Number of diagnoses	26	38
<i>Stage at diagnosis</i>		
– Stage I	5	5
– Stage II	2	2
– Stage III	8	11
– Stage IV	11	18
– Information not available	0	2
<i>Histology at diagnosis</i>		
– Non-small cell lung carcinoma	19	27
– Small cell lung carcinoma	5	6
– Other	1	2
– Clinical diagnosis: no histology performed	1	3
<i>Treatment strategy at diagnosis</i>		
– Palliative	14	24
– Radical	12	14
— Diagnosis to radical treatment: Mean time	53.7 days	53.3 days
— Mean time: radiation or chemoradiation	64.4 days	46.3 days
— Mean time: surgery	46 days	58.9 days
— Diagnosis to radical treatment: Median time	54.5 days	53.5 days

A larger proportion of patients were diagnosed with later stage disease (stage 3 or 4) in the study period in 2020 compared to the period in 2019 (76.3% compared to 73.1%, RR=1.04, p=0.77).

In addition, the ultimate treatment strategy undertaken was palliative, as opposed to radical, in a greater proportion of cases in the study period compared to the reference period (63.2% compared to 53.8%, RR = 1.17, p=0.46).

Despite increased use of the service, mean and median times from diagnosis to treatment in those for radical treatment were similar overall, between the study period and the period in 2019 (mean 53.3 days compared to 53.7). However, time to surgery had increased (58.9 days compared to 46 days) while time to radiation or chemoradiation had decreased (46.3 days compared to 64.4 days).

Discussion

There has been concern that reduced scheduled care could lead to delayed cancer diagnosis during the SARS-CoV-2 pandemic. Indeed, overseas health services have reported decreased cancer diagnosis during this time⁴.

Contrary to this concern, we observed an increased incidence of lung cancer diagnosis during the 'first wave' of the pandemic.

We hypothesise that the increased incidence of lung cancer noticed by our service may be related to patients seeking medical attention for symptoms suspicious for SARS-CoV-2, which overlap with those of lung cancer, and undergoing thoracic imaging, which often involves CT-Thorax for radiological diagnosis of SARS-CoV-2⁵.

However, in spite of increased lung cancer diagnoses, we have not observed a greater proportion of patients presenting with early-stage disease; in fact, a signal has been seen towards patients presenting with later disease and towards a greater number being treated with palliative, as opposed to radical, treatment approach.

Finally, have not observed overall increases in mean times between diagnosis and treatment in patients for radical treatment, despite concerns about delays in scheduled care. However, an increased mean time from diagnosis to surgery has been observed, which may reflect theatre closures and related delays during the pandemic.

Conclusions

Lung cancer continues to have a disproportionate effect on cancer-related mortality, and on population mortality in general, in this country. Our findings suggest that increased diagnoses can be achieved, albeit incidentally, through raised awareness of respiratory symptoms and through augmented use of respiratory imaging modalities.

These data also underscore the importance of keeping vital services open during the SARS-CoV-2 pandemic.

Potential conflicts of interest: None declared.

References

- National Cancer Registry Ireland, 2015. *Cancer Trends – Lung Cancer*. [online]. Available at < <https://www.ncr.ie/sites/ncr/files/pubs/lungTrends2015.pdf> > [Accessed 27 November 2020].
- Latimer, K.M., 2018. Lung cancer: clinical presentation and diagnosis. *FP essentials*, 464, pp.23-26.
- Irish Cancer Society, 2019. Irish Cancer Society Lung Cancer Action Plan. [online] Available at < <https://www.cancer.ie/sites/default/files/2020-02/Irish%20Cancer%20Society%20Lung%20Action%20Plan%202019.pdf> > [Accessed 27 November 2020].
- Dinmohamed AG, Visser O, Verhoeven RH, Louwman MW, van Nederveen FH, Willems SM, Merks MA, Lemmens VE, Nagtegaal ID, Siesling S. Fewer cancer diagnoses during the COVID-19 epidemic in the Netherlands. *The Lancet Oncology*. 2020 Jun 1;21(6):750-1.
- Xu X, Yu C, Qu J, Zhang L, Jiang S, Huang D, Chen B, Zhang Z, Guan W, Ling Z, Jiang R. Imaging and clinical features of patients with 2019 novel coronavirus SARS-CoV-2. *European journal of nuclear medicine and molecular imaging*. 2020 Feb 28:1-6.