Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

find the solutions most beneficial to society. Simultaneously, in the current era of big data,[13] collaboration between different stakeholders (health management, care, research, etc.) is essential. The use of big data would facilitate the construction of more complex models that can take advantage of all data recorded from individual patient monitoring[14] and in this way provide more agile responses to current epidemics.[15]

Funding

This work has received financial support from the Consellería de Cultura, Educación e Ordenación Universitaria (accreditation 2019–2022 ED431G-2019/04) and the European Regional Development Fund (ERDF), which acknowledges the CiTIUS-Research Center in Intelligent Technologies of the University of Santiago de Compostela as a Research Center of the Galician University System.

Conflict of interests

The first 2 authors state that they have no conflict of interests.

Francisco-Javier Gonzalez-Barcala has received honoraria for consultancy, projects or presentations from Chiesi, Menarini, Rovi, Bial, GlaxoSmithKline, Laboratorios Esteve, Teva, Gebro Pharma, ALK, Roxall, Stallergenes-Greer, Boehringer Ingelheim, Mundipharma and Novartis.

Uncited reference

[8].

References

1. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet. 2020;395.
2. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A novel coronavirus from patients with pneumonia in China, 2019. N Engl J Med. 2020;382:727–33.
3. Kickbusch I, Leung G. Response to the emerging novel coronavirus outbreak. BMJ. 2020;368.
4. Greenland S. Multiple-bias modelling for analysis of observational data. J R Stat Soc Ser A Stat Soc. 2005;168(2):267–306.
5. Tsiatis A. Semiparametric theory and missing data. Switzerland: Springer Science & Business Media; 2007.
6. Lipsitch M, Donnelly C, Fraser C, Blake I, Cori A, Dorigatti I, et al. Potential biases in estimating absolute and relative case-fatality risks during outbreaks. PLoS Negl Trop Dis. 2015;9:e0003846.
7. Bang H, Robins J. Doubly robust estimation in missing data and causal inference models. Biometrics. 2006;61:962–73.
8. Anderson RM, Heesterbeek H, Klinkenberg D, Hollingsworth TD. How will country-based mitigation measures influence the course of the covid-19 epidemic? Lancet. 2020;395:931–4.
9. Mizumoto K, Kagaya K, Zarebski A, Chowell G. Estimating the asymptomatic proportion of coronavirus disease 2019 (covid-19) cases on board the diamond princess cruise ship, yokohama, japan, 2020. Euro Surveill. 2020;25.
10. Rajgor DD, Lee MH, Archuleta S, Bagdasarian N, Quek SC. The many estimates of the covid-19 case fatality rate. Lancet Infect Dis. 2020.
11. Bai Y, Yao L, Wei T, Tian F, Jin D-Y, Chen L, et al. Presumed asymptomatic carrier transmission of COVID-19. JAMA. 2020. In press.
12. Layne SP, Hyman JM, Morens DM, Taubenberger JK. New coronavirus outbreak: framing questions for pandemic prevention. Sci Transl Med. 2020;12, pii: eabb1469.
13. Reich NG, Brooks LC, Fox SJ, Kandula S, McGowan CJ, Moore E, et al. A collaborative multiyear, multimodel assessment of seasonal influenza forecasting in the united states. Proc Natl Acad Sci U S A. 2019;116:3146–54.
14. Li X, Dunn J, Salins D, Zhou G, Zhou W, Schüssler-Fiorenza Rose SM, et al. Digital health: tracking physiomes and activity using wearable biosensors reveals useful health-related information. PLoS Biol. 2017;15:e2001402.
15. Viboud C, Vespignani A. The future of influenza forecasts. Proc Natl Acad Sci U S A. 2019;116:2802–4.

Marcos Matabuena[a,*], Oscar Hernan Madrid Padilla[b], Francisco-Javier Gonzalez-Barcala[c,d,e,f]

[a] *Centro Singular de Investigación en Tecnoloxías Intelixentes (CiTIUS), Universidade de Santiago de Compostela, Santiago de Compostela, Spain*
[b] *Department of Statistics, University of California, Los Angeles, United States*
[c] *Department of Medicine, Universidade de Santiago de Compostela, Santiago de Compostela, A Coruña, Spain*
[d] *Centro de Investigación Biomédica en Red de Enfermedades Respiratorias (CIBERES), Madrid, Spain*
[e] *Department of Respiratory Medicine, University Hospital of Santiago de Compostela (CHUS), Santiago de Compostela, A Coruña, Spain*
[f] *Health Research Institute of Santiago de Compostela (IDIS), Santiago de Compostela, A Coruña, Spain*

Corresponding author.
E-mail address: marcos.matabuena@usc.es (M. Matabuena).

Received 18 March 2020
Accepted 22 April 2020

https://doi.org/10.1016/j.arbr.2020.04.006

Lung cancer patients on the waiting list in the midst of the COVID-19 crisis: what do we do now?☆

Pacientes con carcinoma broncogénico en lista de espera en plena crisis del COVID-19: ¿y ahora qué hacemos?

To the Editor,

The pandemic caused by the coronavirus and its resulting infection, COVID-19, has had a major impact in all areas of Spanish public health. Despite social distancing and confinement (enforced to varying degrees in different countries), we are still suffering the consequences of the outbreak and will continue to do so for the rest of the year.

Each hospital contends with the pandemic at different levels. Reference centers, which have a greater number of cases, have had to vacate wards and intensive care units to make room for patients infected with the coronavirus, so the impossibility of transferring surgical patients from regional to tertiary hospitals to receive specialized care and the waiting list delays caused by the suspension of scheduled operations will soon have an impact on patients with lung cancer (LC) not infected by this virus.

The American College of Surgeons (ACS),[1] in their recently published guidelines on the management of patients scheduled for thoracic surgery, categorize the general status of hospitals into 3 phases according to the number of COVID-19 patients admitted: phase 1 - preparation; phase 2 - urgent setting; and phase 3 - extreme emergency (Table 1). In these guidelines, priority is given to patients with a life-threatening emergency (perforated cancer, tumor-associated infection or surgical complications), a histological diagnosis of cancer, greater disease extension, symptomatic

☆ Please cite this article as: Isea de la Viña J, Mayol J, Ortega AL, Alcázar Navarrete AN. Pacientes con carcinoma broncogénico en lista de espera en plena crisis del COVID-19: ¿y ahora qué hacemos? Arch Bronconeumol. 2020;56:602–604.

Table 1
Summary of COVID-19 guidelines for triage of thoracic surgery patients.

Phase	I	II	III
Hospital setting	Few COVID 19 patients, hospital resources not exhausted, institution still has ICU vent capacity, and COVID trajectory not in rapid escalation phase	Many COVID 19 patients, ICU and ventilator capacity limited, or supplies limited, or COVID trajectory within hospital in rapidly escalating phase	Hospital resources are all routed to COVID 19 patients, no ventilator or ICU capacity, or supplies exhausted
Surgery restricted	Patients likely to have survivorship compromised if surgery not performed within next 3 months	Patients likely to have survivorship compromised if surgery not performed within next few days	Patients likely to have survivorship compromised if surgery not performed within next few hours
Level of priority	Cases that need to be done as soon as feasible (recognizing status of hospital likely to progress over next few weeks): - Solid or predominantly solid (>50%) LC or presumed LC >2 cm, clinical node negative - Node positive lung cancer - Post induction therapy LC - Esophageal cancer T1b or greater - Chest wall tumors of high malignant potential not manageable by alternative therapy - Stenting for obstructing esophageal tumor - Staging to start treatment (mediastinoscopy, diagnostic VATS for pleural dissemination) - Symptomatic mediastinal tumors – diagnosis not amenable to needle biopsy - Patients enrolled in therapeutic clinical trials	Cases that need to be done as soon as feasible (recognizing status of hospital likely to progress over next few days): - Perforated cancer of esophagus – not septic - Tumor associated infection – not septic - Management of surgical complications (hemothorax, empyema, infected mesh) – in a hemodynamically stable patient	Cases that need to be done as soon as feasible (status of hospital likely to progress in hours) - Perforated cancer of esophagus – septic patient - Threatened airway - Tumor associated sepsis - Management of surgical complications – unstable patient (active bleeding not amenable to nonsurgical management, dehiscence of airway, anastomotic leak with sepsis)
Cases that should be deferred	Predominantly ground glass (<50% solid) nodules or cancers Solid nodule or LC < 2 cm Indolent histology (e.g. carcinoid, slowly enlarging nodule) Pulmonary oligometastases High-risk patients Tracheal resection Bronchoscopy Upper endoscopy Tracheostomy	All thoracic procedures typically scheduled as routine/elective (i.e. not add-ons)	All other cases deferred Alternate treatment recommended Same as above
Treatment approaches	Alternatives (assuming resources permit): - Endoscopy and stents - Neoadjuvant - SABR - Stent for obstructing cancers then treat with chemoradiation - Debulking (endobronchial tumor) - Nonsurgical staging (EBUS, FNA, CNB) - Extending chemotherapy (additional cycles)	Recommended alternatives (assuming resources permit): - Transfer patient to hospital that is in Phase I - If eligible for adjuvant therapy then give neoadjuvant therapy - SABR - Ablation (e.g. cryotherapy, radiofrequency ablation) - Reconsider neoadjuvant as definitive chemo-radiation, and follow patients for "local only failure" (i.e. salvage surgery)	Same as Phase II

LC: lung cancer; CNB: coarse needle biopsy; EBUS: endobronchial ultrasound; FNA: fine needle aspiration; ICU: intensive care unit; MV: mechanical ventilation; N: nodes; SABR: stereotactic ablative radiotherapy.

patients, or patients enrolled in clinical trials. Alternative, non-surgical treatment approaches should also be considered.

As a result of this situation, LC patients will receive non-standard treatment that will lead to uncertainties in terms of overall disease-free survival.

The Society of Surgical Oncology[2] also issued a message from its president that contained certain recommendations to consider in the treatment of these patients. As in the case of the ACS, hospitals are urged to consider "triage" for a number of reasons, such as the potential shortage of qualified personnel and the potential lack of materials and beds due to these resources being diverted to treat patients with COVID-19. A very recent retrospective review[3] of COVID-19-affected cancer patients reported that most (25%) of the 28 patients in the series had LC. The symptoms they presented were fever (23, 82.1%), dry cough (22, 81%) and dyspnea (14, 50.0%), together with lymphopenia (23, 82.1%), raised C-reactive protein (CRP) (23, 82.1%), anemia (21, 75.0%), and hypoproteinemia (25, 89.3%). As can be seen, several of these symptoms rule out surgery in waiting list patients. The authors concluded that cancer patients show deteriorating conditions and poor outcomes, and recommend that CB patients receiving antitumor therapy should undergo vigorous screening for COVID-19 infection[4,5] (clinical-epidemiological history, RT-PCR, serology), and that treatments that cause immunosuppression, including surgery, should be avoided.

What will happen to our patients who have been on the waiting list for at least 1, 2 or 3 months? Will their cancer be treated at

its pre-pandemic stage? Or will supplementary testing need to be updated due to the delays in medical treatment? Will their tumor need to be restaged?

Given the characteristics of public health in our country, many hospitals might look to these recommendations for guidance. However, we believe that although the clinical guidelines published so far give us an idea of ẅhat to doẅith our waiting lists, the circumstances in each hospital will differ, and these guidelines merely offer theoretical recommendations on ẅhat to doör ḧow to do it in the best possible way. We call for guidelines that allow us to treat all patients in this situation - not only those with LC, but also those with other thoracic tumors that require surgical or multimodal treatment. Such guidelines would help us plan and treat patients currently on the waiting list within a reasonable time frame of less than 3 months.

Certain details need to be taken into account, such as the patient's willingness to undergo surgery at the current time, their family situation, or even the possibility that some patients have or have had COVID-19, in which case the best moment to reschedule surgery must be carefully selected. On the other hand, we may need to screen all waiting list patients for coronavirus infection. What should we do? We urgently need organization, prioritization, and treatment guidelines for the future management of these patients. We need to prioritize, not only on the basis of knowledge, but also in the knowledge that we are doing the right thing.

References

1. COVID-19 Guidelines for Triage of Thoracic Patients. American College of Surgeons; 2020. Available from: https://www.facs.org/covid-19/clinical-guidance/elective-case/thoracic-cancer
2. Cancer Surgeries in the Time of COVID-19: A Message from the SSO President and President-Elect. Society of Surgical Oncology; 2020. Available from: https://www.surgonc.org/wp-content/uploads/2020/03/COVID-19-Letter-to-Members.pdf
3. Zhang L, Zhu F, Xie L, Wang C, Wang J, Chen R, et al. Clinical characteristics of COVID-19-infected cancer patients: a retrospective case study in three hospitals within Wuhan, China. Ann Oncol. 2020, http://dx.doi.org/10.1016/j.annonc.2020.03.296.
4. Lung Cancer Group, Respiratory Medicine Branch of Chinese Medical Association, Chinese Respiratory Tumor Collaboration Group. Respiratory infectious diseases-guidelines for the diagnosis and treatment of patients with advanced non-small cell lung cancer during the epidemic of new coronavirus pneumonia (trial) [J /OL]. J Tuber Respir Dis. 2020;43 (2020-03-03), https://doi.org/10.3760/cma.j.cn112147-20200221-00138. [Pre-published online]. Available from: http://rs.yiigle.com/yufabiao/1183340.htm
5. [Clinical management of lung cancer patients during the outbreak of 2019 novel coronavirus disease (COVID-19)]. Zhongguo Fei Ai Za Zhi. 2020;23:136–41, http://dx.doi.org/10.3779/j.issn.1009-3419.2020.03.02. Epub 2020 Feb 20.

Jesus Isea de la Viña[a,e,*], Julio Mayol[b,e], Ana Laura Ortega[c,e], Bernardino Alcázar Navarrete[d]

[a] *Servicio de Cirugía Torácica, Hospital Clínico Universitario de Valencia, Valencia, Spain*
[b] *Departamento de Cirugía, Hospital Clínico San Carlos, Instituto de Investigación Sanitaria San Carlos, Universidad Complutense de Madrid, Madrid, Spain*
[c] *UGC de Oncología Médica, Complejo Hospitalario de Jaén, Jaén, Spain*
[d] *Neumología, Hospital de Alta Resolución de Loja, Loja, Granada, Spain*
[e] *CIBER Enfermedades Respiratorias, Instituto de Salud Carlos III, Madrid, Spain*

Corresponding author.
E-mail address: jesusisea@gmail.com (J. Isea de la Viña).

Received 7 April 2020
Accepted 1 May 2020

https://doi.org/10.1016/j.arbr.2020.05.003

Asthma and COPD in hospitalized COVID-19 patients☆

Asma y EPOC en pacientes hospitalizados por COVID-19

To the Editor,

Various studies have analyzed the presence of comorbidities and risk factors in patients with COVID-19. It is interesting to note that the frequency of chronic respiratory diseases varies widely in different countries. The number of patients with asthma and chronic obstructive pulmonary disease (COPD) in case series from hospitals in China and Italy were much lower than expected for the prevalence of these diseases.[1–4] In New York and the UK, however, the frequency is much higher.[5,6]

In a series of 140 SARS-CoV-2 patients hospitalized in Wuhan, no cases of asthma were described, and only 1.4% had COPD.[1] In another multicenter series from the same country that included 476 patients with COVID-19, 4.6% had COPD, but asthma was not mentioned among the comorbidities.[2]

In a systematic review of the prevalence of comorbidities in patients with COVID-19, also in China, Yang et al.[3] observed respiratory diseases in only 1.5% of patients. Similar results have been reported in Italy; in a series of 1,591 patients with COVID-19 seen in critical care units, 4% had COPD, but the asthma figure was so low that it is not mentioned individually.[4] This, however, contrasts starkly with data from the US and the UK.

In a series of 5,700 patients hospitalized in New York, 9% had asthma and 5.4% had COPD.[5] The figures in the UK are even higher: 19% of patients had non-asthmatic chronic pulmonary disease, and 14% had asthma[6] (which has a prevalence of 6.5% in the UK[7]), suggesting that these comorbidities are very significant risk factors.

The conflicting findings in the prevalence of chronic respiratory diseases in patients with COVID-19 in different countries, and the possibility that these diseases or their treatment may modify the risk of SARS-CoV-2 infection, have prompted us to analyze this sit-

☆ Please cite this article as: García-Pachón E, Zamora-Molina L, Soler-Sempere MJ, Baeza-Martínez C, Grau-Delgado J, Padilla-Navas I, et al. Asma y EPOC en pacientes hospitalizados por COVID-19. Arch Bronconeumol. 2020;56:604–606.