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.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
The quintuple penalty of obese patients in the COVID-19 pandemic

Since it broke out 4 months ago, the COVID-19 pandemic has strongly impacted medical practice worldwide. After spreading from China, COVID-19 has claimed an increasing number of victims among whom persons with obesity are overrepresented. We do not know whether persons with obesity are more exposed to the pandemic than others. We do know that during the H1N1 epidemic, obesity was a major risk factor for severe forms of infection needing hospitalization in intensive care or with fatal outcome [1]. The COVID-19 pandemic is following the same pattern. However, the impact of COVID-19 on persons with obesity goes further than a risk of severe forms. Adverse effects are observed even in those not infected, during hospitalization in those who are, and after discharge from hospital. The penalties that persons with obesity suffer are 5-fold.

First penalty

Noninfected persons with obesity are being confined at home during the pandemic. Hence, any planned surgery they need is deferred to some later date, with the attendant adverse psychological impact of this uncertainty. Confinement also has several harmful effects [2], including possible malnutrition, recurrence of eating disorders, stress or depression, and isolation or social exclusion.

Second penalty

Obesity is often associated with respiratory malfunction (reduced maximum expired flow volume and functional capacity, sleep apnea, and chronic obstructive pulmonary disease), and other co-morbidities, such as diabetes, cardiovascular diseases, and nonalcoholic fatty liver disease. This array of disorders, sometimes present concurrently, worsen the prognosis of patients with COVID-19 [3]. There are still no large-scale data, but it is estimated that three quarters of patients in hospital intensive care units are overweight or obese [4]. The inflammatory syndrome associated with obesity (elevated cytokine levels) and still imperfectly understood immune system disturbances also contribute to the worsened condition of patients with inflammation secondary to COVID-19 infection [5].

Third penalty

During intensive care, patients with obesity who are immobilized are exposed to the risk of rapid muscle wasting, resulting in sarcopenic obesity [6]. This new clinical condition, which is difficult to diagnose, further worsens co-morbidities, lowers capacity for prompt recovery in convalescence, and lengthens hospital stay [7]. It is therefore important not to delay nutritional support in intensive care [8].

Fourth penalty

Care given to obese patients, besides medical care, is highly specific and needs means and expertise that may be lacking in hospitals struggling with the COVID-19 pandemic [9]. The difficulties with tracheal intubation and with the necessary mobilization of obese patients, often frequent, are well-known. Beds have to support extra loads, and care equipment, such as cuffs and imaging instruments (computed tomography and medical resonance imaging), have to be adapted to patients’ girth. Last, if ventilation is performed, the supine lying position must be avoided in these patients and the prone position preferred.

Fifth penalty

If a patient’s condition improves and he or she can leave intensive care and be discharged from hospital, the question then arises of functional, nutritional, and physical rehabilitation [10] and psychological support, which may last for months [11]. This postcritical care will further delay any surgery.

Conclusion

Patients with obesity are clearly at a severe disadvantage compared with other patients affected by COVID-19. If they are not infected, they suffer harmful effects of confinement. If they are infected, they are exposed to a greater risk of admission to prolonged intensive care, with sarcopenia, care provision ill-suited to their specific needs, and possible postcritical complications. The impact of the COVID-19 pandemic in the setting of a global syndemic that includes obesity, thus deserves urgent consideration [12].
Karem Slim, M.D.
Department of Digestive Surgery
CHU Clermont-Ferrand
Clermont-Ferrand, France

Francophone Group for Enhanced Recovery After Surgery
Beaumont, France

Yves Boirie, M.D., Ph.D.
Department of Nutrition
CHU Clermont-Ferrand
Clermont-Ferrand, France

References

[1] Louie JK, Acosta M, Winter K, et al., for the California Pandemic (H1 N1) Working Group. Factors associated with death or hospitalization due to pandemic 2009 influenza A (H1 N1) infection in California. JAMA 2009;302(17):1896–902.

[2] Brooks SK, Webster RK, Smith LE, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. Lancet 2020;395(10227):912–20.

[3] Zhou F, Yu T, Du R, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. Lancet 2020;395(10229):1054–62.

[4] Donnelly L, Newey S. Obese or overweight coronavirus patients most in need of critical care [monograph on the Internet]. London: The Telegraph, 2020 [cited 2020 March 20]. Available from: https://www.telegraph.co.uk/news/2020/03/23/obese-overweight-coronavirus-patients-need-critical-care/.

[5] Dietz W, Santos-Burgoa C. Obesity and its implications for COVID-19 mortality. Obesity (Silver Spring). Epub 2020 Apr 1. https://doi.org/10.1002/oby.22818.

[6] Tieland M, van Dronkelaar C, Boirie Y. Sarcopenic obesity in the ICU. Curr Opin Clin Nutr Metab Care 2019;22(2):162–6.

[7] Barazzoni R, Bischoff SC, Boirie Y, et al. Sarcopenic obesity: time to meet the challenge. Clin Nutr 2018;37(6 Pt A):1787–93.

[8] Borel AL, Schwebel C, Planquette B, et al. Initiation of nutritional support is delayed in critically ill obese patients: a multicenter cohort study. Am J Clin Nutr 2014;100(3):859–66.

[9] Ryan DH, Ravussin E, Heymsfield S. COVID 19 and the patient with obesity - the editors speak out. Obesity (Silver Spring) 2020;28(5):847.

[10] Trouwborst I, Verreijen A, Memelink R, et al. Exercise and nutrition strategies to counteract sarcopenic obesity. Nutrients 2018;10(5):605.

[11] Grabowski DC, Joynt Maddox KE. Postacute care preparedness for COVID-19: thinking ahead. JAMA. Epub 2020 Mar 25.

[12] Swinburn BA, Kraak VI, Allender S, et al. The global syndrome of obesity, undernutrition, and climate change: the Lancet Commission report. Lancet 2019;393(10173):791–846.

https://doi.org/10.1016/j.socare.2020.04.032