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EDITORIAL

Ten key points that vascular doctors learned very quickly about COVID-19



The Coronavirus disease 2019 (COVID-19) has led hospital units of all specialties to manage patients suffering from severe forms of this infection. The experience of the first weeks suggests that 10 points were essential for vascular doctors to optimize the management of these patients.

- Discussions with specialists who had to manage patients at the beginning of the COVID-19 epidemic, including physicians working in emergency departments and resuscitation units, internists and pulmonologists, allowed to shorten, by about a week, the practice learning curve in the management of this disease in vascular medicine departments as well as to focus on the mistakes to avoid.
- Physical examination and simple clinical data collection allowed not only to suspect the diagnosis but also to suggest the stage of the disease (early viral phase, pulmonary phase, inflammatory phase) in order to adapt the treatment: date of first symptom occurrence, respiratory signs, fever, respiratory rate, oxygen saturation and dependency.
- Systematic measurement of the biological parameters of inflammation and thrombosis (C-reactive protein, ferritin, fibrinogen and D-dimer levels) at the beginning of patient's management and during follow-up, exhibited diagnostic and prognostic significance.
- Age and comorbidities (obesity, diabetes, hypertension...) were immediately identified as major prognostic factors leading to adapted clinical management.
- Oxygen saturation and oxygen need of each patient have been recognized as major prognostic factors associated with comprehensive knowledge of the medical and technical supplies (including oxygen masks) allowing high-flow oxygen therapy (> 6 liters per minute) outside critical care units. The importance of proper patient positioning, on the lateral side or on the stomach in case of posterior pulmonary disease on imaging, should be highlighted in order to reduce oxygen requirements.
- Thoracic CT scan performed at patient's admission has proved to be an essential imaging tool to confirm the diagnosis, particularly in the event of negative PCR or while

awaiting its result, and to specify the stage of the disease with therapeutic consequences.

- A very high-risk of venous thrombosis and pulmonary embolism (and arterial thrombotic events) was quickly identified. This particularly high thrombotic risk requires a systematic Doppler ultrasound screening or a CT pulmonary angiography in the event of D-dimer levels higher than that expected by the inflammatory syndrome or in the event of acute respiratory deterioration.
- Thromboprophylaxis with anticoagulant regimens that differed from the usual clinical practice was underlined in order to adapt heparin (low-molecular-weight or unfractionated) doses and number of daily injections to the high thrombotic risk of this infection. Expert consensus thus decided to use an anticoagulant in curative doses in the prevention of thromboses in severe states, associating particularly high elevation of D-dimers and other acquired factors of thrombophilia (age, obesity...).
- The latest scientific information is rapidly and extensively available thanks to videoconferences, online bibliography and social networks, keeping physicians at the forefront of disease knowledge and thus avoiding additional mortality.
- Ethical reflection has never been more important than during this health crisis and has to be present at all stages of patient's management: decision not to resuscitate, recourse to sedation, decision for palliative care, decision to use treatments available such as hydroxychloroquine and azithromycin, immunomodulatory agents such as anti-interleukin 1 or anti-interleukin 6, plasma therapy... without proof of their efficacy, and finally, decision to propose to a patient to be randomly assigned to the control group of an ongoing randomized trial.

Vascular physicians are not intended to become specialists of COVID-19. But in the present health crisis however, they will certainly have participated in the collective effort always with pragmatism, never with dogmatism. Especially, they will have alerted about the specific high thrombotic risk of this infection and suggested in this particular

context an adaptation of thromboprophylaxis and the interest of low-molecular-weight heparin.

Disclosure of interest

The authors declare that they have no competing interest.

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