Emerging paradigms in sepsis

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Sepsis is a common condition among critically ill patients, and is associated with high mortality, considerable short-term and long-term morbidity, and high costs, making it a burden not only for patients, their families, and health-care systems worldwide, but to society as a whole. In 2017, an estimated 48.9 million cases of sepsis and 11 million sepsis-related deaths were recorded worldwide, and sepsis represented almost 20% of all global deaths.[1] Improving understanding and awareness of sepsis risk factors and pathophysiology, such that sepsis can be prevented and treatments improved, should therefore be considered a priority for health-care policy makers, influencers (eg, researchers, educational institutions, opinion leaders, and the media), and implementers (eg, hospital managers, and health-care staff) worldwide.

Despite considerable experimental and clinical research over the last few decades, no specific new sepsis treatments have been developed. However, much has changed in terms of process of care and patterns of management; notably, a movement towards individualised therapies for this very heterogeneous group of patients.[2]

This collection of reviews and comments published in *eBioMedicine* aims to highlight some of the key developments in sepsis research, to promote further discussion of key translational topics of relevance to both basic scientists and clinical researchers working in the sepsis field, and to highlight gaps and opportunities in translational research. For example, interesting new data about the immune changes that occur during pregnancy are discussed.[3] Although pregnant patients are at increased risk of sepsis, pregnancy is often an exclusion factor in experimental models and clinical trials. Understanding of the pathophysiological pathways in pregnant patients will help improve our knowledge across sepsis in general, and thus help develop appropriate treatments for all patients, not just those who are pregnant. How machine learning is being employed to identify biomarkers of sepsis is covered in one article,[4] and several others[5–7] discuss the role of endotypes and phenotypes in characterising patients with sepsis so that treatment can be targeted at those most likely to respond. One of these articles[5] focuses on low-resource settings, in which sepsis is particularly prevalent, and another[6] on the specific case of community-acquired pneumonia. This *eBioMedicine* series also covers the differences and similarities between bacterial sepsis and COVID-19,[8] providing new pathophysiological evidence that can inform treatment choices. The three types of current sepsis therapeutics (control of the underlying infection, haemodynamic stabilisation, and modulation of the host response), and the need to move towards personalised approaches for each type, are discussed in one article,[9] and another[10] focuses on the history of mediator-targeted sepsis therapies and the challenges faced in developing new, effective treatments. Lastly, the need to include more women in sepsis research is highlighted,[11] both as participants involved in trials and as members and leaders of research teams and guideline panels.

By putting together this collection of up-to-date reviews and commentaries, we aimed to share current knowledge on the complex pathophysiology and translational challenges of sepsis and to increase awareness and stimulate discussion with the ultimate aim of improving patient outcomes.

Declaration of interests

I declare no competing interests.

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