



T2-Inflammation-Induced Asthma, Chronic Obstructive Pulmonary Disease Strategies and Anaesthesia-Induced Lung Abnormalities

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Our title aims to headline the main contents of this new BRN Reviews' issue. In the first contribution, *Sarah E Diver* under the guidance of the world-renowned British scholar *Christopher E Brightling*, from the *Institute for Lung Health, Department of Respiratory Science, Glenfield Hospital, University of Leicester*, an elite research centre devoted to the study of chronic obstructive airway diseases, present comprehensively various characteristics of **T2-inflammation in severe asthma**. They point to severe asthma, an entity with heterogeneous pathobiology reflecting host-environment interactions at all scales of disease from the genetic to organ level. They first focus on management paradigms; second, they underline the relevance of type-2 immunity-mediated mechanisms; and, third, they consider the optimisation of current management strategies, novel therapeutic approaches centred on management beyond T2-inflammation and the way expectations should be adapted to overall progress in the management of the disease. Given that the pathogenic role of T2-inflammation in severe asthma has been the core of recent pharmacotherapy and the subject of many high-quality reviews as well,

the authors thoroughly review mechanistic aspects and potential therapeutic strategies co-existing with or without T2-inflammation.

The second contribution is written by *Francesca Polverino*, an emerging researcher in pulmonary medicine, from the prestigious *Asthma and Airway Disease Research Center, University of Arizona, Tucson*. The title of her paper, **the many faces of chronic obstructive pulmonary disease (COPD)**, is a strong declaration of interests in which she puts the new concept of precision medicine at the service of several COPD characteristics suggesting to be advocated. After a bewitching historical insight of the dawn, rise and fall of the term COPD, she proposes to disentangle a few conceptual facets such as pulmonary emphysema versus airway disease, that of early versus late COPD and that of asthma-COPD overlap syndrome versus high eosinophil COPD, let alone that of GOLD 1 versus GOLD 4 grades. The reader is invited to considerably maturing on

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one of the final sentences: ‘... *Airflow limitation is becoming too big of a giant whose feet don’t fit anymore into the shoes of COPD. Thus, will we still be calling it “COPD” in 50 years? Probably not (author’s opinion)...’*. Although these words may need more evidence before getting full support from the respiratory community, it is fascinating to give some thoughts on that.

The third contribution, with a provocative title in regards to the **Global Initiative for Obstructive Lung Disease (GOLD) reports** which nicely complements the previous review, is authored by three academic scholars actively involved in the current activities of GOLD, namely *Nicolas Roche*, from *Hôpital Cochin, Université de Paris Descartes, Paris*, current President of the *Société de Pneumologie de Langue Française (SPLF)* and Guidelines Director of the *European Respiratory Society (ERS)*, *Gerard Criner* (from *Lewis Katz School of Medicine, Temple University, Philadelphia, Pennsylvania*), and *Claus Vogelmeier*, current GOLD Scientific Committee chair (from *University Medical Centre Giessen and Marburg, Philipps-Universität Marburg*), all three distinguished members of the GOLD Scientific Committee. Their aim is to recall that the most important concept endorsed by GOLD is likely the announcement that COPD is a treatable disease. Although the goals of GOLD have always been global, i.e. applicable to all countries and settings all over the world with highly variable economic contexts and access to healthcare, a major challenge faced has been that in many geographic locations spirometry is not widely accessible and many treatments are not available as yet. Another major challenge comes from the limited magnitude of therapy effects that can be expected, given the partially irreversible nature of lung damage, a combination of emphysema

and airway disease. Originally, GOLD emerged as a reaction against the negative nihilism that prevailed at the late nineteen-eighties in regard to COPD. This entity was considered to be incurable, self-inflicted and even untreatable at the time of its launching. However, the response of GOLD always was to provide a stimulus for a fresh, invigorated and pro-active input with the aim to reverse this nihilistic approach by the respiratory community care. The captivating strategy by GOLD has been made possible by progress in the medical communities newly discovered knowledge of the disease, let alone the scientific evidence of the efficacy of many pharmacological and non-pharmacological interventions on all sorts of patient-reported outcomes.

The next paper concentrates on a very timely topic also related to COPD management, i.e. **the usefulness of clinical audits in COPD**, by *José Luis López-Campos*, *María Abad Arranz* and *Laura Carrasco Hernández*, all three from the *Unidad Médico-Quirúrgica de Enfermedades Respiratorias, Instituto de Biomedicina de Sevilla (IBIS), Hospital Universitario Virgen del Rocío, Universidad de Sevilla*. The first author, an established international researcher in a consolidated Spanish academic hub, is very active and productive in the field of management of the disease. The development of clinical audits is one of his areas of expertise and this paper just aims to update the clinical audits for COPD as an available tool with a potential to improve healthcare. In principle, the assessment of the clinical activity to improve healthcare should be part of our daily clinical duties. Unfortunately, as rightly pointed out by the authors, the training of attending practitioners in this area remains inadequately

incomplete, a fact that is particularly relevant when facing chronic, serious conditions with a profound impact on patients' quality of lives, their relatives and the use of health care resources as it is the case of COPD. Likewise, the authors underline that, in terms of morbidity and mortality, COPD remains a first-magnitude disease, with a wide prevalence in the overall population and a considerable impact on the health system. Indeed, the authors expose quite convincingly their experience recommendations.

The last paper is devoted to **anaesthesia-induced lung imaging and gas exchange abnormalities**, representing a very comprehensive contribution to the understanding of the many complications underlying conventional anaesthesia. Göran Hedenstierna, who works in the lung function laboratory bearing his own name, *Hedenstierna Laboratory, Department of Medical Sciences, Uppsala University, Uppsala*, in which his scientific input is still most influential represents a long-life scholar whose brilliant research has been centred into the interaction between gas exchange disturbances and lung imaging abnormalities under a large variety of anaesthesia conditions. All in all, he is a fine experienced physiologist in the use of the complex multiple inert gas elimination technique (MIGET)¹. Although it is considered that more than 230 million anaesthesias are performed annually worldwide, mostly elective interventions without harm, postoperative pulmonary complications can happen with a prevalence of almost 30%. With this background

in mind, anaesthesia-induced lung function abnormalities impairment during anaesthesia and intra- or post-operative lung complications represent a very important medical challenge. His paper focuses on arterial oxygenation impairment during anaesthesia and the mechanisms behind this impairment, more specifically the imbalance between alveolar ventilation and pulmonary blood flow, often quite deleterious. By nicely deploying the mechanisms causing the development of pulmonary atelectasis during anaesthesia in both healthy individuals and patients, through the unravelling of the complex interplay between pulmonary and non-pulmonary determinants of oxygenation, in obesity or COPD, or during the judicious use of positive end-expiratory pressure manoeuvres, the author interprets very authoritatively the development of anaesthesia-induced major changes. Importantly, he also points to preventative approaches.

My hope is that readers will be excitingly attracted by these five pieces of work, as usual written by experienced scholars highly devoted to each of their own fields!

REFERENCES

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