Foreword

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It has been nearly 60 years since Laurell and Eriksson first described alpha-1 antitrypsin (AAT) deficiency (AATD) after it was noted that, out of approximately 1500 serum protein electrophoreses submitted to their laboratory in Sweden, the sera from five patients showed an absence of the protein band contributed by AAT.[1] Upon further investigation, it was discovered that three of these five patients presented with emphysema at a young age (35–44 years) and one patient had a family history of emphysema.[1,2] The influential work of Laurell and Eriksson established some of the key clinical features of AATD that we know today: an hereditary state characterized by reduced levels of AAT in patient sera and early-onset emphysema.[1,2] Subsequently, 6 years after Laurell and Eriksson's first description of AATD in 1963, Sharp and colleagues first linked AATD with liver disease.[3]

Since then, much has been learned about AATD and the role of dysfunctional or deficient AAT in the pathophysiology of lung and liver disease (as well as other systemic conditions). The major pathology related to AATD is emphysema, and, in 1987, a treatment consisting of human plasma-derived AAT first demonstrated biochemical efficacy in raising serum and lung AAT levels in patients with AATD.[4] The therapy was subsequently approved by the United States Food and Drug Administration (FDA) for emphysema associated with severe AATD.[5] Nonetheless, almost two decades passed before clinical trials demonstrated that AAT therapy was disease modifying, reducing the progression of AATD-associated emphysema.[6,7]

The slow progress of research in AATD has been born partly out of the condition's status as a rare disease, and, even today, AATD remains substantially underdiagnosed.[8] Underdiagnosis or misdiagnosis of AATD is thought to arise mainly from a lack of awareness, with non-pulmonologists – who may be key gatekeepers to testing referral – known to have particularly low awareness of the condition.[9,10] To this end, the present monograph 'Alpha-1 antitrypsin deficiency: Learning from the past and building the path for the future', has been assembled to provide a comprehensive overview of AATD, moving from what historical and modern-day studies have taught us about AATD, to what the future may hold in terms of new treatments and disease management. This series of reviews provides details of the various disease states associated with AATD, the role of imaging in AATD, testing considerations, current treatment recommendations, the role of surgical intervention, as well as future directions in this field. Each review is written by authors with expertise in each discipline, bringing together our knowledge with the hope of helping patients today, as well as highlighting areas where further research is required to optimize treatment of patients in the future.

Conflict of interest statement

RAS is Medical Director of the Alpha-1 Foundation and AlphaNet, two not-for-profit organizations serving the AATD community. RAS participates in advisory boards for Grifols, CSL Behring, AstraZeneca, Mereo BioPharma, Vertex, and Takeda, for which he receives reimbursement of travel expenses, and has received grants from the National Institutes of Health (NIH) and Vertex to perform clinical trials.

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Supplemental material

Supplemental material for this article is available online.

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