Meet the Professor

Prof. Klaus F. Rabe: COPD as a systematic disease

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Klaus F. Rabe, professor of Pulmonary Medicine at the University of Kiel and Director of the Department of Pneumology at Clinic Grosshansdorf (Figure 1). He has been active in various fields of Respiratory Medicine worldwide, predominantly asthma, COPD and lung cancer. Prof. Klaus F. Rabe has served on various editorial boards. He was the first European Associate Editor of the American Journal of Respiratory and Critical Care Medicine and has been Chief Editor of the European Respiratory Journal until recently. His current interests are related to large clinical trials in COPD and asthma, the mechanisms of airway inflammation, and the endoscopic staging of lung cancer. Prof. Rabe has served on GINA and GOLD, and is a member of the German and Dutch Chest Societies, the British Pharmacological Society, the American Thoracic Society, and he served as President of the European Respiratory Society 2011-2012. In the 3rd international Conference on Respiratory Disease, we are honored to have an interview with Prof. Rabe (Figure 2).

Figure 1 Prof. Klaus F. Rabe.

JTD: Good afternoon, Prof. Rabe. Thank you so much for sparing your time for this interview. You have given an excellent presentation regarding COPD as a systematic disease. Would you please further introduce the characteristic of defining COPD as a systematic disease in terms of its mechanism?

Prof. Rabe: Well, quite interesting question. First of all, it is the disease that occurs in the individuals who are older and who are likely to have other conditions as well. Secondly the risk factor for COPD in a large part of the population with the disease is cigarette smoking, which effects on the organ system like vascular system and heart. It will incapacitate the individual, by making them physically inactive and bringing the consequence for metabolic disorders, overweight and diabetes. There are systemic markers of the disease, the inflammation found in the blood for example, which makes it likely that this is a chronic inflammatory process that affects not only some parts of lung but also other organ systems.

Figure 2 Prof. Klaus F. Rabe with *JTD* Editor.

JTD: COPD as a systematic disease can lead to comorbidities, How to deal with the comorbidities in treating COPD patients?

Prof. Rabe: Well, I think first of all, individuals, physicians and people who care for the patients need to be aware that individuals with advanced COPD are very likely to have something else. That means in management of the disease, you need generalist approach. That would obviously mean that in treatment of advanced COPD we should recognize other conditions thought in understanding of the outcome of COPD, identification of the comorbidities is important, which means patients with advanced COPD need as much pulmonary medication as the other medication.

JTD: We understand that COPD and asthma have many similar symptoms. How to identify them at the early stage?

Prof. Rabe: Well, that's an interesting question. There are individuals who have both diseases. If they get more severe, it is something that probably, in terms of treatment, is not that different anymore. However, for the mild disease, the differentiation is important, which means someone with mild asthma clearly needs steroids, and someone with mild COPD should not have them probably. Then how do we differentiate them? First of all, we should look at the age and onset of disease, which means the time when the symptoms start. If someone starts at middle age, it is very important to know whether there is a former history of it. Secondly, we need to understand if there is there a family history of allergy and asthma. Thirdly, we have to identify the present allergies. Fourthly, we should pay attention to whether there are any seasonal changes of symptoms or are there any daily changes of symptoms as a clinical presentation. With information of all these, there is still something which needs testing. The patients that have an obstructive lung disease pattern with asthma only sometimes have a normalization of lung function which you would not expect with the patient with COPD, but there will remain a small proportion of individuals where whatever you do, there will be very difficult to make the distinction and I think these are the few patients where you can rightly say that they have both diseases, namely a chronic obstructive disease with an asthmatic component.

JTD: Are there any effective tools to monitor the progress of the disease?

Prof. Rabe: I think it is next to symptomatic assessment because breathlessness has an exercise primarily unaddressed, and it is one of the hallmark symptoms. People have to understand the role of chronic bronchitis, cough and sputum production seems to be more and more obviously a bad component, because it relates to more outcome and it is however classically. I believe, that the lung function assessment still plays a central role in increasing the severity of the disease and this seems that patients and doctors need to know to monitor and safeguard exacerbation which is expected to be prevented and the results of people that have many of those episodes fare worse than people just do not.

JTD: Is there any bio-markers used for evaluation of COPD?

Prof. Rabe: Unfortunately, no. People do try to look for bio-markers, like serum bio-markers but with poor results in differentiating aspects of COPD though some people ever get to use nitric-oxide, an exhalation. I believe for the initial assessment nitric-oxide can be helpful and if you have accessibly high level of it and the fitting clinical presentation is witnessed, it is likely the patient have asthma. Eosinophilia in the sputum or in the peripheral blood is also the indicator for asthma. In a sense, there are some bio-markers that give you a hint into what direction the diagnosis will take, but the validity of them is still questionable.

JTD: As you said that, when we try to identify COPD patient we will check the family history, should the genetics of COPD also be considered?

Prof. Rabe: Well, this is an emerging field. There is no question that there are environmental influences and early life environmental influences that could not use epigenetic changes in risk population. Currently, there is research of genetic COPD which are not yet conclusive. Despite the fact that some people may be more enthusiastic, that we are looking for epigenetic modification or genomic and genetic asthma, it is very difficult to find genetic risks in the genetic background. Therefore, I am not too optimistic what will come out of it, clearly not for clinical practice, but genetic research in COPD is currently an ongoing field.

JTD: In the drug development for COPD patients, what would be the challenges and opportunities in the field?

Prof. Rabe: Obviously, since COPD is a disease

characterized by increasing mortality, it will be likely to change mortality issues. Basically, there are some indications that long-acting bronchodilators like anti-cholinergic may do something on this. I do believe the evidence that steroid changes mortality is very slim, and I actually think that the trials trying to demonstrate this have not been convincing for the change of mortality in COPD. But there is what we want to achieve with new development. Unfortunately, there is very little new literature in the field. There are lots of developments that have copied from one another. They are just new range of long-acting bronchodilators drugs, beta-agonist, anti-cholinergics, but not really new drugs and surprisingly, we do not have an effective treatment for chronic bronchitis, which is a very prevalent disease. In summary, there are large gaps in treatment and we need some better new drugs.

JTD: Where do you see the future development of COPD research is going?

Prof. Rabe: First of all, I think you have to understand more about the risk factors in it and which is on the top. Cigarette smoking is an important factor but there are many other risk factors that contribute to the prevalence of this disease. Secondly I think in terms of drug development, as I said, drugs that treat chronic bronchitis or signs or symptoms of this and/or severe dyspnea and/or emphysema need to be developed and still there is long way to go. Thirdly for the management, people need to realize that rather than just treating lung function impairment and symptoms, it is a holistic approach that the disease needs. It needs recognizing of the other underlying conditions and comorbidities, and you have to treat them as a standard treatment of COPD. It seems to me that since this disease is so much linked to other diseases, it needs a treatment algorithm that does not stop by inhaler medication for the lung period. It needs to be managed in a much more broad sense, where we also need more studies obviously to see what would a cardiac and metabolic medication do for a patient with COPD that also have a sort of respiratory medication. Finally, it is a change of life style, which depends on not only reducing risk factors like smoking, but also in fact the diet and exercise. The concept of exercise takes care of the lot of aspects that are inherent in the morbidity as well including insulin resistance and positive cardio-vascular outcomes. Still, that is something have not been educated enough.

JTD: But patients with advanced COPD, maybe some exercises are not suitable, right?

Prof. Rabe: That is sure. But it is a matter of level of exercise. The problem is people need to get educated with rehabilitation training programs, which need to be adapted to the individual level. However, I think there is no single level of COPD that is inappropriate. It is a matter of the mild or severe depending on the individual constitution.

JTD: How do you foresee the international cooperation, especially the cooperation between China and Europe, in the treatment research of COPD?

Prof. Rabe: I do believe that lots of things have changed. There are more and more trials done in China, and logistic of the former clinical science in this country is improved dramatically. There is more personal interchange of individuals and for example, if you look into the European Respiratory Society meeting, there are more and more Chinese delegates going there. And what I still believe is that there is a language barrier that we have to overcome. That should begin in schools, and continue to university. So the structured programs for medical or clinical science are in English. I think the cooperation can be improved much by the improvement English abilities. On the other side, westernized countries need to understand where the science in east or Asia is, but the things happening last year have seen great increase in this level of this project. I am here to talk at Chinese conference and I have come to China three times this year. We talk at the meeting and I think it is the good side. There are lots of mutual agreements. To solve specific problems, we need international efforts to understand risk, genetic and environmental profiles. I am very hopeful and optimistic that we have bright future in cooperation, which I believe will lead to better science result in the end.

JTD: Thank you so much for your informative talk!

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(Science Editor: Grace Li, JTD, jtd@thepbpc.org)

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