CLINICAL VIGNETTE

The Whys And Wherefores Of Pulmonary Rehabilitation

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Many of us have personal experience of physical therapy and recognize the value of rehabilitation in musculoskeletal disorders. Moreover, we can readily appreciate its value in the setting of cardiac disease. On the other hand, physicians in general may not understand the goals, methods and outcomes of rehabilitation in the setting of chronic lung disease. I will try to summarize the "State of the Art" in this area and share something of the UCLA experience.

While pulmonary rehabilitation has been shown to benefit a wide variety of chronic lung patients (COPD, interstitial disease, cystic fibrosis and others), COPD represents the largest group and has been studied most extensively. In this population, numerous studies have shown 1) reduced hospitalizations and short-term mortality, 2) improved quality of life with less symptomatic perception of dyspnea and fatigue, and 3) improved exercise tolerance[1].

Although respiratory symptoms with abnormal pulmonary function naturally prompt referral to pulmonary rehabilitation and relate to its main goal of ameliorating symptoms, for many patients there are also psychosocial factors that mitigate the efficacy of rehabilitation. Thus, in addition to physical and respiratory therapists, there needs to be resources to deal with ancillary issues, i.e., social workers, psychologists and dietitians. In an Australian study of 192 COPD patients, questionnaires indicated a wide range of depression and anxiety scores with more than 20% of patients experiencing depression or anxiety severe enough to warrant directed therapy[2].

There has been an evolving understanding of the limitations of pulmonary rehabilitation and optimization of timing. One would intuitively expect it to benefit post-operative thoracotomy patients. An Australian study of 60 lung transplant patients showed significant improvement in spirometry and six-minute walk when patients underwent a seven-week rehabilitation program starting approximately one month post-operatively. However, patients with complicated post-operative courses were excluded[3]. In a German study of 138 lung transplants with extended hospitalization, a three-week program of inpatient pulmonary rehabilitation resulted in improvement of spirometry, maximum work rate and six-minute walk[4]. In another study, patients after resection of lung cancer were randomized to pulmonary rehabilitation or "usual care". While those provided with rehabilitation showed significantly better six-minute walk performance, they reported more post-operative pain and more limitation of activity. Quality of Life measures were not different between the two arms of the study and the authors opined that rehabilitation might be more efficacious after a post-operative postponement of several months[5].

As stated above, the majority of patients undergoing pulmonary rehabilitation are those with COPD, for whom the program serves as an adjunct to bronchodilator therapy and judicious antibiotic usage. Patients with the various interstitial lung diseases (ILD) present a different challenge, principally because there is presently no truly effective treatment for ILD other than transplantation. Moreover, many of these patients develop secondary pulmonary hypertension. An extensive survey of interventions in ILD (34 studies) among which only six studies specifically addressed pulmonary rehabilitation, meta-analysis showed significant improvement in six-minute walk, but results were mixed regarding quality of life[6].

The Pulmonary Rehabilitation program at UCLA has a ten-year history. Adminstratively, it is grouped together with Cardiac Rehabilitation, Physical Therapy, Respiratory Therapy and Speech Therapy. The program is housed in the Westwood campus outpatient department. The volume of referrals has been robust, in part due to UCLA's very active lung transplant program and the paucity of such programs in the Los Angeles metropolitan area. Patients may have to wait several months to be accommodated into the schedule. The usual program comprises two sessions per week for eight weeks, which is generally covered by third party payers. Patients may choose to continue maintenance at personal expense. Medicare guidelines permit 36 lifetime sessions (for a diagnosis of COPD). Patients must have up-to-date pulmonary function tests for referral. Since the staff also manages cardiac rehabilitation, nurses as well as

respiratory therapists work with all patients. Monthly activities – "Better Breathers" – aim to help patients understand their disease and build social support.

For 2011-2012, our program served 148 patients, of whom 35 had single or double lung transplants. The later, not surprisingly, are younger, with mean age 58 years, as opposed to the non-transplant patients, who averaged 70 years. Since many of our transplant patients are referred from other healthcare systems, they do not take their rehabilitation with us. In contrast to ref. [3], UCLA's goal has been to start rehabilitation as soon after discharge as possible. Among the non-transplant patients, COPD constituted 57% and idiopathic pulmonary fibrosis 18%, the remainder mainly comprising patients with pulmonary hypertension or scleroderma lung disease with a few lung cancer and cystic fibrosis patients. Two-thirds of lung transplant patients had interstitial lung disease as their underlying indication. This does not reflect the relative incidence of obstructive versus restrictive disease in the general population, nor the worldwide predominance of emphysema in transplant programs.

Perhaps for its simplicity and because endurance is a primary goal of rehabilitation, improvement in the six-minute walk has been the principal outcome measured. Overall, our program has been able to achieve an average improvement of 26%, although there is a very wide variance, due to many patient-related factors. Excluding transplants, COPD patients showed greater improvement (24% on average) than did interstitial lung disease patients (16% on average). Transplanted patients did considerably better. On average they more than doubled their six-minute walk lengths, which probably reflects both the improvement in their intrinsic lung function and gradual recovery after surgery. For 2011/2012, eight percent of patients (n=12) opted for the maintenance program. Their participation ranged from one month to 1.5 years with 42% continuing for over a year. One-third are still participating today.

We are proud of our outcomes, which we feel are attributable to the excellence of our therapeutic staff and look forward to expansion of the program at UCLA in the future. (Dr. Frank is Medical Director and Ms. Randles is Manager of UCLA Pulmonary Rehabilitation).

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