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Editorial

Avoiding Early Dialysis for Severe Fluid Retention in Heart Failure

Retrasar el inicio de diálisis para tratar la retención de líquidos grave en la insuficiencia cardiaca

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In patients with severe congestive heart failure (CHF) and excessive fluid retention, peritoneal dialysis (PD) may be one way of treating them to prevent further fluid retention. In the study published by Núñez et al.[1] in *Revista Española de Cardiología* PD therapy in resistant CHF with excessive fluid retention was compared to a similar non-treated group and showed a lower mortality risk and lower mortality using days alive and out of the hospital and the composite endpoint of death and/or readmission for CHF. These results when added to other similar studies are impressive and clearly suggest that such therapy could hold a place in the therapy of resistant CHF. However there is a need for further elucidation by randomized controlled studies.

The authors stated that aggressive therapy for CHF was given before PD was started. This includes the classic treatment of CHF, namely angiotensin-converting enzyme inhibitors or angiotensin II receptor blockers, beta-blockers, and furosemide (oral or intravenous). It may also include spironolactone and eplerenone. The hyperkalemia often seen with this therapy may be prevented in most cases with oral ion exchange resins. The addition of thiazides or metolazone to the diuretic regime may greatly increase diuresis and prevent drug resistance. In their study it may be that not all these therapies were used to maximally tolerated doses before PD was instituted.

In the article published in *Revista Española de Cardiología*, the authors describe their experience with PD in patients with CHF resistant to well-established therapies.[1] They found that, compared to a group of similar patients who either refused PD or for some reason could not have this procedure done, the group treated with PD had a lower mortality risk, and lower mortality using days alive and out of the hospital and the composite endpoint of death and/or readmission for CHF. Complications of PD such as peritonitis were very uncommon. It is clear that these patients did not need dialysis for uremia since their mean serum creatinine was only around 2 mg/dL and their creatinine clearance around 30 mL/min/1.73 m^2. The reason for PD was to control fluid overload, and PD seemed to do this very well. The authors quote several studies that show similar positive effects of PD in these types of patients. Yet the recently published European Society of Cardiology guidelines for the diagnosis and treatment of acute and chronic heart failure 2012 do not even mention PD as a possible form of therapy.[2] The positive results of the present study clearly suggest that a large randomized controlled study is needed to further clarify the subject.

One problem is: were well-established therapies really used to the maximum before PD therapy was instituted in these "resistant" CHF patients?

The mean hemoglobin level in their study was around 11 g/dL. Since hemoglobin levels of less than 11 g/dL can be considered to represent anemia, about half the patients in their study could be considered anemic. There is much evidence that iron deficiency is common in CHF and is often associated with anemia, and that correction of iron deficiency can improve the anemia, the renal function, and the CHF.[3–5] In the study of Nunez et al.[1] the levels of serum iron, % transferrin saturation, and serum ferritin were not reported and probably were not performed; therefore, intravenous iron was not given in any patient. The anemia of CHF is also often associated with both reduced erythropoietin production and marked bone marrow resistance to erythropoietin. If the anemia persists after intravenous iron administration, erythropoiesis-stimulating agents can be added which can further improve hemoglobin concentration and CHF.[3–5] This was also not administered in their study.

Only 7% of their patients received thiazides despite the presence of severe fluid retention. It is known that at these levels of renal function thiazides and the long-acting metolazone still work well in combination with intravenous furosemide to achieve maximal diuresis.[2,6–9] In addition, intravenous furosemide may work better than oral furosemide (which is poorly absorbed in CHF) and we do not know whether they gave intravenous furosemide as well as oral furosemide and in what dose. There is still uncertainty if a bolus dose of furosemide is better than a slow infusion in CHF but doses up to 400 mg over 4 h can be effective.[2,10,11]

Spironolactone or eplerenone can be used in CHF for fluid overload with mild to moderate renal failure and are often very effective in fluid removal in this situation if the serum potassium is carefully monitored.[2,12,13] However spironolactone was used in only about 35% of cases in their study. The danger of hyperkalemia is greatly increased in severe renal failure with these agents in these CHF patients but we[14] and others[15] have shown that an oral ion exchange resin can be used in mild to moderate renal failure

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with CHF to prevent potassium absorption in the gut and may thus prevent hyperkalemia and allow low doses of aldospirone or eplerenone to be used safely and effectively.

Angiotensin-converting enzyme inhibitors were only used in 30% and angiotensin II receptor blockers in only about 20% of cases. Although some controversy exists about their use in severe renal failure, in patients with mild to moderate renal failure, as in this study, there was no reason why one of them could not have been used in more patients to help improve the CHF and the fluid retention. These 2 agents should probably not be used together.

Similarly, beta-blockers were only used in 58% of cases which is a rather low rate of use.[2] Again, we do not know if they were used in adequate doses although judging from the mean heart rate of around 77 it is likely that recommended doses of beta blockers were often not used.

The evidence that omega 3 in fish oil in doses of 1-2 g/day orally may improve the CHF is impressive[16,17] and we now add this therapy to our therapeutic regime. It may help to prevent or treat resistant CHF.

Our point is that while PD may really be very helpful in some of these resistant, fluid-overloaded CHF patients, a great effort should first be made to use standard medications in recommended doses to treat the CHF and fluid retention. If the fluid can be removed by aggressive medical therapy, even if this means an associated worsening of renal function, the patient may survive in good condition for several years without the need for hospitalization[18] or dialysis. In our experience, in patients with CHF and mild to moderate renal failure, it is rare that medical therapy will not control fluid overload. Thus dialysis can often be delayed for several years if it is needed at all. But this study suggests that PD may play a role if standard methods fail.

CONFLICTS OF INTEREST

None declared.

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