Blood pressure control in Diabetic Nephropathy

Why control?

Control of blood pressure is the single most important factor to delay progression of renal disease in diabetic nephropathy. The UKPDS showed that controlling the BP is more important than glycemic control in prevention of both micro and macrovascular complications, this was particularly evident for the macrovascular complications. So the aim is to prevent progression of diabetic nephropathy and reduce the incidence of cardiovascular complications as well as to prevent death.

Goals of BP control

Most international guide lines recommend a level of control below 130/80 in diabetic patients and a level below 120/75 in cases associated with more than 1gm proteinuria

How to control?

The American kidney foundation, and others, issued guide lines to control the BP. ACE inhibitors or angiotensin receptor blockers should be used as a first step in view of the role these agents play in delaying progression of renal diseases in general and diabetic nephropathy in particular. The second step would be to add a diuretic (frusemide if creatinine is more than 1.8 mg%) . If still uncontrolled add a long acting calcium channel blocker. If still the goal is not reached, add a beta blocker (if the pulse is more than 84) or a long acting calcium channel blocker of a different category (if the pulse is less than 84). The last step is to use a direct vasodilator. Choice of different antihypertensives should take in consideration the compelling indications and the conditions favoring the use of special groups of antihypertensives issued by the JNC VI and VII. It is to be noted that control of the BP is more important than how to control it.

1. **Factors affecting the choice of antihypertensives**
   - International recommendations as mentioned.
2. Compelling and favorable indications in JNC VI and VII.
3. Special features in diabetics such as autonomic neuropathy, impotence, high risk of CVS complications, degree of renal failure, metabolic derangement and others.
4. Economic factors.

**ACE inhibitors or Angiotensin receptor blockers (ARBs)**
The issue is important because international recommendations did not favor the use of both agents together, at the same time you should start with one of them.

Available data are:

1. In type I Diabetes with microalbuminuria the use of ACE inhibitors is established.
2. In type I Diabetes with macroalbuminuria and in hypertensive cases ACE inhibitors are recommended by most, but not all, authorities.
3. In type II Diabetes with no renal disease ACE inhibitors are recommended because of the overwhelming evidence of their CVS protective value (International Diabetes Federation). However evidence is now growing for the protective role of ARBs in diabetics (Life and Valiant studies).
4. In type II Diabetes with microalbuminuria, the use of ARBs is recommended (Irma II and Marval studies).
5. In type II Diabetes with macroalbuminuria and renal impairment, the use of ARBs is recommended (Renale and IDNT studies). It is to be noted that in both studies cardiac complications and mortality were not different from the placebo. It was clear that although ARBs protected the kidney they did not protect the patient from death and were no different from other conventional antihypertensives.
6. Renal failure patients, diabetics and non diabetics, are known to be at a high risk of CVS complications due to the presence of specific, in addition to the conventional risk factors. ACE inhibitors proved to be protective for these patients. Studies using ARBs in this field are still progressing.

Dilemma of Life and Renale studies:

The life study clearly showed that Losartan reduced mortality if compared to Atenolol despite the same BP control.
The Renale study showed that Losartan was not superior to other antihypertensives in saving patients life. The difference lies in the different population studied, Renale dealt with patients having impaired kidney functions where as Life cases had normal functions. Renal failure patients are known to have different CVS risk factors profile. It is to be noted that cases in both Renale and IDNT studies had a creatinine less than 3mg%.

ACE inhibitors or ARBs in type II Diabetes (personal view):

1. Cases with microalbuminuria and normal kidney functions use ARBs.
2. Cases with macroalbuminuria and creatinine less than 3mg% use ARBs.
3. Cases with more advanced renal failure protecting the kidney become a less important issue than the occurrence of CVS complications and the use of ACE inhibitors would be more logic.
4. Cases with a very high CV risk, even if creatinine is below 3mg%, the use
of ACE inhibitor is recommended in view of the proven value of these agents in CVS protection.

5. It is to be noted that in type II diabetics with no renal involvement, ACE inhibitors are still the first choice.

List of references


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