FIRST RENAL REPLACEMENT THERAPY SELECTION IN DIABETIC PATIENTS

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CONTEXT

- ERBP working group : on-going guidelines for treatment of patients with CKD stage 4-5-dialysis and diabetes
- Clinical practice guidelines on shared decision-making regarding dialysis encourage physicians to provide clear information to patients about all treatment options and their benefits and risks
- 40% of the new patients starting RRT have diabetes

THE QUESTION FOR TODAY

- Should patients with CKD stage 5 and diabetes mellitus start with peritoneal dialysis or hemodialysis as a first modality?
- I will not speak about : palliative care, preemptive transplantation, when to start…

THE PICO QUESTION

- Population : ESRD patients with diabetes or diabetic nephropathy
- Intervention : Peritoneal dialysis, all kind
- Comparator : Hemodialysis, all kind
- Outcome : survival, quality of life, hospitalisation, metabolic profile, diabetes complications….

SELECTION OF THE STUDIES

- Database searching (Cochrane methodology until 01/2013)-> 337 records
- 277 records excluded by title and abstract (2 independant reviewers)
- 60 full-text articles assessed for eligibility (2 independant reviewers)
- 21 studies included for data extraction

PITFALLS

- No randomised controlled trials
- Different case-mix between HD and PD

  -> *indication bias ?*
- Modality switch between PD and HD
- Renal transplantation

  -> *selection bias ?*
- Effects may vary considering age, gender, comorbidities, time +++

  -> *interactions ?*
- Diabetic patients : subgroups (few details)
- Published outcomes : mortality/survival (18), infection (1), *hospitalisation (1), satisfaction (1)*

MORTALITY /SURVIVAL

- 4 studies non exploitable
- 1 study based on prevalent patients
- 13 cohort studies on incident patients
  (Registries, historical prospective cohorts, retrospective cohorts)

How to counteract indication bias ?

- PD younger and less comorbidity (11)

- Adjustment on case-mix (10)
- Propensity score (3)
- Instrumental variables (0)

How to counteract interactions ?

- Non proportionnal hazards (Cox model)

- Stratification
  - *Time (8/13) : time + age (4), time + comorbidities (3), time alone (1)*
  - *Age (3), Age + gender (1)*
  - *No stratification (1)*

Risks : Numerous sub-group analysis,

Low power

How to counteract selection bias due to transplantation?

➢ Transplantion for younger and less comorbidities

- All death after RRT start (2)
  - *Intention-to-treat analysis*
- Censoring at renal transplantation (11)
  - *Hypothesis : non informative censoring !*
  - *Risk : Over estimation of the cumulative risk of death*
- Transplantation as time-dependant variable (0)
- Competiting risks analysis (0)

How to take into account modality switch ?

- More switch for PD patients, higher mortality at switch

- Intention-to-treat analysis (13) : first modality
- As-treated (6) : time-dependent variable
- Censoring at switch (1)
- Switch considered as treatment failure (1)
- Multistate model (0)
- Inverse probability weights (0)
- Marginal structural models (0) ->cJASN 04/2013

RESULTS ?

- Higher risk on PD
  - *After 6 months (1)*
  - *Coronary heart disease (1)*
  - *Congestive heart failure (1)*
  - *Age : 45-50-60-65 (4)*
  - *Elderly women (1)*
- Lower risk on PD
  - First 1-2 years (3)
- No statistical difference (2)

DISCUSSION

- No evidence-based data in favour of PD….
- Some concerns about PD for elderly and frailty patients…

- Numerous methodological pitfalls +++
- No data on other outcomes (complications of diabetes, quality of life…)

First modality vs. long term integrated strategy ?

Observed distribution of the patients in the various treatment modalities according to time since first RRT, for incident patients 45-69 years old, with diabetes, N= 8 264 (REIN registry)

PD : 10% at initiation

Over the 15-year period, PD accounted for 4.5% of the RRT time