

Survival advantage of hemodialysis relative to peritoneal dialysis in patients with end-stage renal disease and congestive heart failure

Sens et al, Kidney International, juillet 2011.

Contexte

- Insuffisance cardiaque congestive c/o IRT:
 - Prévalence 25-35%.
 - Associé augmentation mortalité (excès risque mortalité 25-35%)

- Initiation dialyse c/o IRT avec insuffisance cardiaque en France:
17% dialyse péritonéale (DP) [versus 13% pour patients sans insuffisance cardiaque].
 - Avantages DP: ultrafiltration continue, pas FAV.

- Stack et al, 2003: *Impact of dialysis modality on survival of new ESRD patients with congestive heart failure in the United States*.

➔ Mortalité augmentée chez patients IRT et insuffisants cardiaque en dialyse péritonéale (RR 1.3).

Survival advantage of hemodialysis relative to peritoneal dialysis in patients with end-stage renal disease and congestive heart failure. Sens et al, 2011.

- ***Objectif:***

Comparer SURVIE chez patients en IRT et insuffisance cardiaque traités par DIALYSE PERITONEALE VERSUS HEMODIALYSE.

- ***Type:*** Etude prospective.

- **Population:**

- French REIN Registry (« Renal Epidemiology and Information Network”).
- *Inclusion*: Patients >18 ans, antécédent insuffisance cardiaque (selon description du néphrologue référent dans le French REIN Registry), initiation dialyse chronique planifiée (janvier 2002 - décembre 2008).
- *Exclusion*: initiation dialyse urgence.
- *Suivi*: jusqu’à transplantation rénale, décès, décembre 2008.

- 2002-2008:

7003 patients IRT + insuffisants cardiaque initient dialyse.

➤ **4401 patients** après exclusion dialyse en urgence.

- Classifiés selon type de dialyse en cours au 90^e jour après initiation dialyse (ou à l'initiation si décès dans les 90 jours).

Table 1 | Baseline patient characteristics by dialysis modality at day 90 after first renal replacement therapy in incident ESRD patients with associated CHF (French REIN Registry, 2002–2008)

| | Whole cohort (n=4401) | | HD ₉₀ (n=3468) (78.8%) | | PD ₉₀ (n=933) (21.2%) | | P-value |
|---|-----------------------|-------|-----------------------------------|-------|----------------------------------|-------|---------|
| Age at first RRT (mean years ± s.d.) | 73.2 ± 11.5 | | 72.5 ± 11.6 | | 75.9 ± 10.1 | | < 0.001 |
| Gender (female) | 1450 | 32.9% | 1109 | 32.0% | 341 | 36.5% | 0.008 |
| CHF (NYHA III-IV) | 1213 | 27.6% | 898 | 25.9% | 315 | 33.8% | < 0.001 |
| CVC at dialysis initiation | 1421 | 32.3% | 1324 | 38.2% | 97 | 10.4% | < 0.001 |
| <i>Primary renal disease</i> | | | | | | | < 0.001 |
| Diabetes | 1191 | 27.1% | 970 | 28% | 221 | 23.7% | |
| Renal vascular disease | 1662 | 37.8% | 1276 | 36.8% | 386 | 41.4% | |
| Glomerular nephropathy | 286 | 6.5% | 237 | 6.8% | 49 | 5.3% | |
| Polycystic | 101 | 2.3% | 89 | 2.6% | 12 | 1.3% | |
| Other | 1161 | 26.4% | 896 | 25.9% | 265 | 28.4% | |
| <i>Comorbidities</i> | | | | | | | |
| Type 1 diabetes | 151 | 3.4% | 121 | 3.5% | 30 | 3.2% | 0.47 |
| Type 2 diabetes | 1920 | 43.6% | 1541 | 44.4% | 379 | 40.6% | < 0.001 |
| CAD ^a | 1899 | 43.4% | 1475 | 42.8% | 424 | 45.9% | 0.088 |
| PVD ^b | 1632 | 37.8% | 1315 | 38.6% | 317 | 34.9% | 0.040 |
| PVD Leriche III-IV | 515 | 12.2% | 437 | 13.1% | 78 | 8.7% | 0.001 |
| Cerebrovascular disease | 582 | 13.3% | 445 | 12.9% | 137 | 14.9% | 0.120 |
| Chronic lung disease | 779 | 17.9% | 605 | 17.6% | 174 | 18.9% | 0.342 |
| Liver cirrhosis | 85 | 1.9% | 66 | 1.9% | 19 | 2.1% | 0.759 |
| Current cigarette smoking | 352 | 9.8% | 297 | 10.3% | 55 | 7.8% | 0.039 |
| Behavior disturbances | 155 | 3.6% | 119 | 3.5% | 36 | 3.9% | 0.523 |
| eGFR (MDRD equation) ^c | 10.9 ± 6.3 | | 10.3 ± 5.3 | | 13.2 ± 8.5 | | < 0.001 |
| eGFR ≥ 15 ml/min per 1.73 m ² (MDRD equation) ^c | 581 | 16.4% | 363 | 13.2% | 218 | 27.8% | < 0.001 |

- Après J90:
 - 0.6% groupe HD passe en DP.
 - 10.5% groupe DP passe en HD.
 - 3.2% bénéficie transplantation rénale.

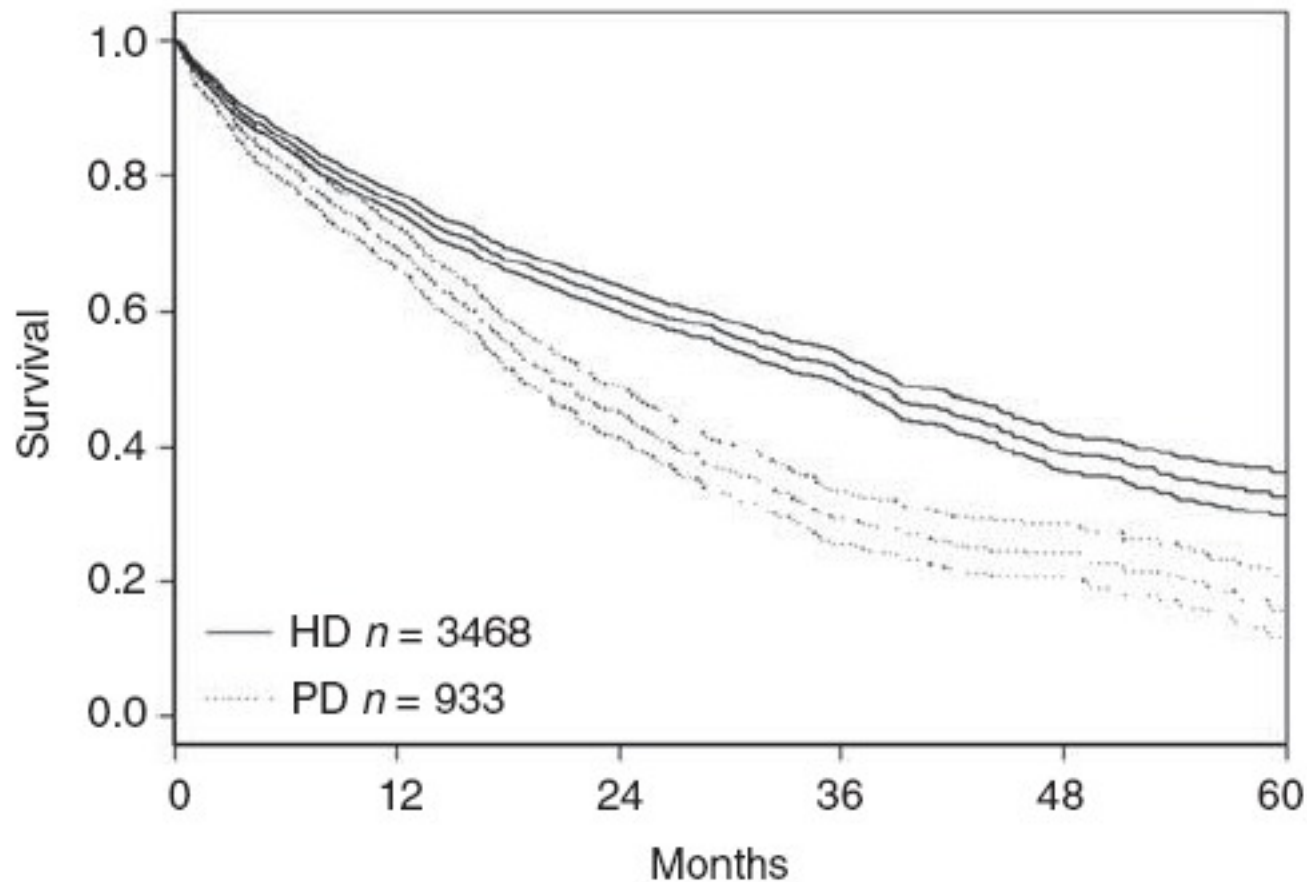


Figure 1 | Non-adjusted survival and 95% confidence interval by day 90 dialysis modality in incident end-stage renal disease patients with associated congestive heart failure (French REIN Registry, 2002-2008, Kaplan-Meier, $P < 0.0001$).

**Décès groupe DP
versus HD:
RR 1.55 (1.40-1.72).**

**Survie moyenne:
20.4 mois dans groupe DP
36.7 mois dans groupe HD**

Table 2 | Cause of death (number, %) by dialysis modality in incident ESRD patients with associated CHF (French REIN Registry, 2002–2008)

| | HD ₉₀ (n=1173) | PD ₉₀ (n=490) | P-value ^a |
|-----------------------------|---------------------------|--------------------------|----------------------|
| <u>Cardiovascular cause</u> | 410 (35.0%) | 197 (40.2%) | <u>0.04</u> |
| Sudden death | 210 (17.9%) | 75 (15.3%) | 0.20 |
| Infectious disease | 114 (9.7%) | 49 (10.0%) | 0.86 |
| Cancer | 82 (7.0%) | 20 (4.1%) | 0.02 |
| Other known | 266 (22.7%) | 125 (25.5%) | 0.21 |
| Unknown | 91 (7.7%) | 24 (4.9%) | 0.04 |

Table 3 | Multivariate analysis in incident ESRD patients with associated CHF (French REIN Registry, 2002–2008, Cox regression)

| | Adjusted hazard ratio | 95% CI | P-value |
|--|-----------------------|-----------|---------|
| ○ PD ₉₀ vs HD ₉₀ | 1.48 | 1.33–1.65 | <0.0001 |
| ○ Age at first RRT (+1 year) | 1.04 | 1.03–1.05 | <0.0001 |
| Female vs male | 1.02 | 0.92–1.13 | 0.70 |
| ○ CHF NYHA III-IV vs NYHA I-II | 1.52 | 1.38–1.68 | <0.0001 |
| ○ CVC use at dialysis initiation | 1.35 | 1.22–1.49 | <0.0001 |
| Type 1 diabetes | 1.11 | 0.98–1.27 | 0.11 |
| Type 2 diabetes | 1.00 | 0.95–1.05 | 0.99 |
| CAD | 1.09 | 0.99–1.20 | 0.09 |
| ○ PVD | 1.23 | 1.11–1.35 | <0.0001 |
| Cerebrovascular disease | 1.11 | 0.98–1.27 | 0.10 |
| Chronic lung disease | 1.09 | 0.97–1.22 | 0.17 |
| ○ Liver cirrhosis | 1.89 | 1.40–2.54 | <0.0001 |
| Current cigarette smoking | 1.05 | 0.88–1.26 | 0.56 |
| ○ Behavior disturbances | 1.81 | 1.45–2.25 | <0.0001 |

Abbreviations: CAD, coronary artery disease; CHF, congestive heart failure; CI, confidence interval; CVC, central venous catheter; ESRD, end-stage renal disease; HD, hemodialysis; NYHA: New York Health Association; PD, peritoneal dialysis; PVD, peripheral vascular disease; REIN, Renal Epidemiology and Information Network; RRT, renal replacement therapy.

Analyse de sous-groupes:

Table 4 | Multivariate analysis in incident ESRD patients with associated CHF (French REIN Registry, 2002–2008, Cox regression), stratified by age (cutoff: 75 years) and diabetes status (all *P*-values for interaction > 0.05)

| Group | Number | Adjusted HR | 95% CI | <i>P</i> -value |
|-----------------------------|--------|-------------|-----------|-----------------|
| Age < 75 years, no diabetes | 987 | 1.89 | 1.42–2.52 | < 0.001 |
| Age < 75 years, diabetes | 1108 | 1.49 | 1.15–1.94 | 0.002 |
| Age ≥ 75 years, no diabetes | 1343 | 1.46 | 1.22–1.74 | < 0.001 |
| Age ≥ 75 years, diabetes | 963 | 1.45 | 1.17–1.80 | 0.001 |

Abbreviations: CHF, congestive heart failure; CI, confidence interval; ESRD, end-stage renal disease; HR, hazard ratio; REIN, Renal Epidemiology and Information Network.

Biais?

- Allocation DP versus HD NON randomisée → biais de sélection?
 - Plus de patients à haut risque dans groupe DP? (âge et stade NYHA plus élevé)
- Erreurs de classification dans le French REIN Registry (selon validation c/o 444 patients) → biais d'information?
 - Dialyse planifiée/non planifiée: <5%.
 - Insuffisance cardiaque/pas insuffisance cardiaque: 1-3%.

Hypothèses

- Augmentation risque décès dans groupe DP:
 - Tirage fluide inadéquat/imprévisible?
 - Augmentation risque infectieux (péritonites)?
 - Suivi médical moins régulier??

- Nécessité études randomisées!

Merci pour votre attention!