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*
Primary renal disease							*< 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%	
Comorbidities							
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.

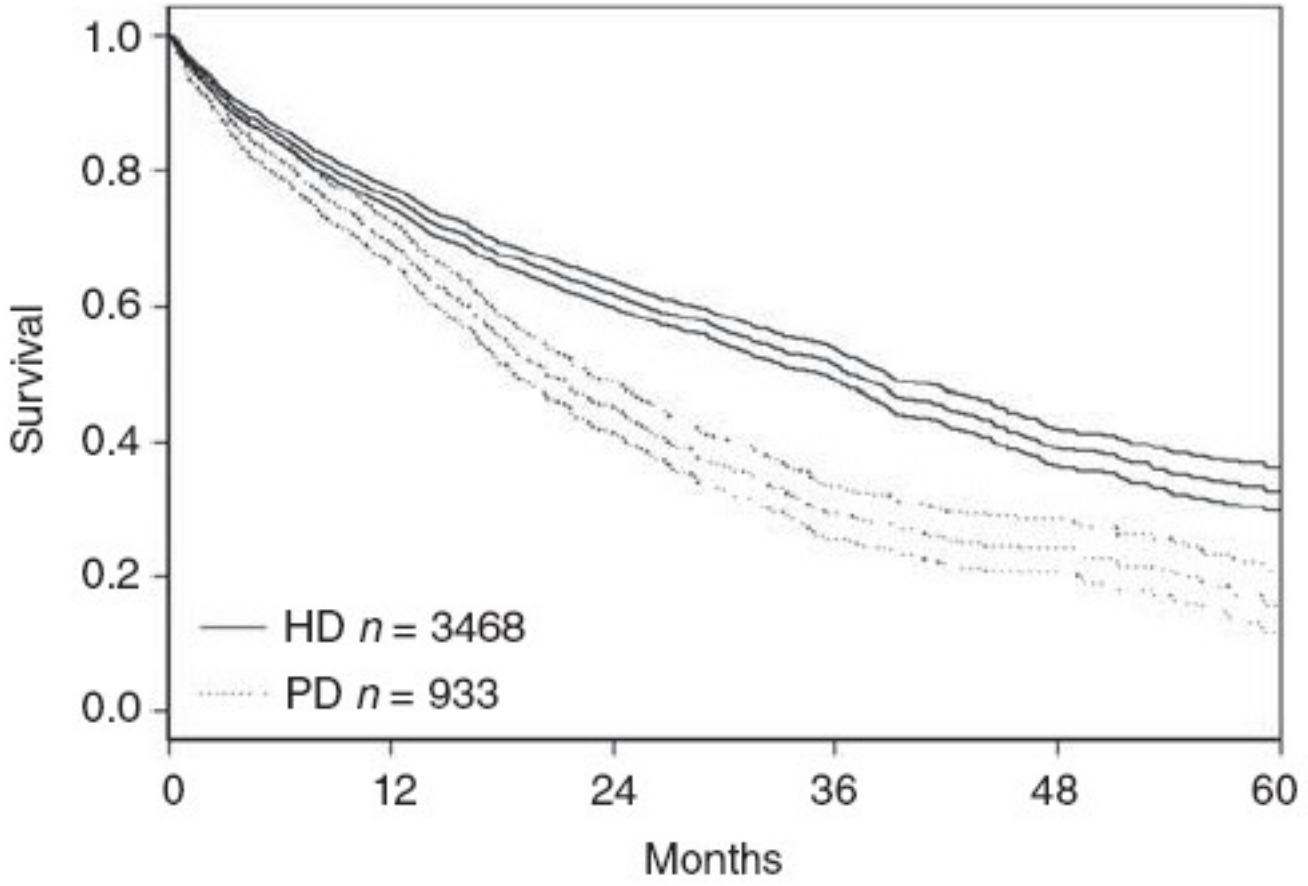

Figure 1 | Non-adjusted survival and 95% confidence interval by day 90 dialysis modality in incident end-stage renal disease patients with associated congestive heart failure (French REIN Registry, 2002–2008, Kaplan–Meier, $P < 0.0001$).

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]
Cardiovascular cause	410 (35.0%)	197 (40.2%)	0.04
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	*P*-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 $\geqslant 75$ years, no diabetes	1343	1.46	1.22–1.74	<0.001
Age $\geqslant 75$ 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!