HYBRID DIALYSIS: PRACTICE ISSUES

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DISCLOSURES

- Speaker has received honoraria from:
  - AMGEN
  - Abbott
  - Eli Lilly

- Speaker does not possess significant knowledge or experience re: ‘Hybrid Dialysis’ (presentation is a ‘collaborative product’)

OBJECTIVES

- Identify clinical and psychosocial factors that may influence the decision to proceed with hybrid dialysis.
- Understand potential advantages and pitfalls of hybrid dialysis.

QUESTIONS RAISED

- What is the role of hybrid/bimodal dialysis?
  - Initiate early vs ‘late’ (after many months/yrs on PD alone)?
  - To ‘extend’ time on PD?
  - To improve quality of life?
  - To improve survival?
  - To alleviate ‘procedural fatigue’ related to PD?
  - Tailor to a certain patient profile?

OUTLINE

- Definition/Characteristics
- Clinical case presentation
- Reported experience and outcomes
- Medical issues
- Psychosocial issues
- Advantages
- Challenges

HYBRID DIALYSIS: DEFINITION

- ‘Bimodal dialysis’
- ‘Combination therapy, PD with HD’
- Usual scenario is addition of once weekly HD to established PD prescription (CAPD or CCPD)
  - Occasionally, PD added to standard HD prescription for volume control if short daily HD ineffective
  - Any combination of PD with HD (can be home-based or center-based) – prescription/schedule depends on clinical needs and psychosocial issues

CLINICAL CASE PRESENTATION

- Mr. M.W., 35 y/o single maintenance engineer with ESRD d/t IgA nephropathy, on CCPD for 5 yrs; ‘ambivalent’ re: transplant
  - Enjoys traveling; visits family in U.K.
  - Takes road trips on his motorcycle
  - No steady relationship
  - Progressive decline in health/functional status/QOL over past 6-12 months related to inadequate solute clearance

CLINICAL CASE PRESENTATION

- Mr. M.W. , cont'd.
  - Patient decides to switch to Home Hemodialysis, but does not want PD catheter removed; trip to U.K. planned in 2-3 months
    - While in U.K. patient does CAPD, which goes reasonably well, but quite uremic upon return home
  - Continues HHD, 20 hrs/week (reluctant to do nocturnal HD); becomes progressively more uremic, as not performing HD 'regularly'
  - Decision made to schedule HD 2x/wk in center, at home minimum once/wk, option to still do CCPD

REPORTED EXPERIENCE AND OUTCOMES

- Masakane et.al. PDI 2008;28 (suppl)
  - 18% of PD pts in Japan treated with combination Tx
- Suzuki et.al. Adv Perit Dial 2012;28 (Japan)
  - Men more likely to receive combination PD/HD, had earlier addition of HD (once/wk), and may have resulted in improved survival
  - Combination therapy improved solute removal and increased serum albumin and hemoglobin

REPORTED EXPERIENCE AND OUTCOMES

- Hoshi, H. et al. Adv Perit Dial 2006;22 (Japan)
  - 9 CAPD pts added one HD/wk, on PD 3.6 yrs duration
    - CCr increased from 45 L/wk to 60 L/wk
    - UF increased from 700 mL/day to 1000 mL/day
    - SBP decreased; hemoglobin, albumin increased ($p<0.05$)
- McIntyre, CW. PDI 2004;24 (U.K.)
  - 6 incident ESRD pts started bimodal dialysis: 2, 3-hr HD/wk combined with 2 PD exchanges/day
    - BP controlled with reduction in meds
    - LV index decreased
    - Residual renal function unchanged over mean time on BMD of 346 days

REPORTED EXPERIENCE AND OUTCOMES

- McIntyre, CW. PDI 2004;24
  - ‘added benefits’ :
    - If problems with AVF/AVG, no need to insert CVC (pts could do PD exclusively until access issue resolved)
    - If problems with PD catheter dysfunction, or severe peritonitis requiring removal, pts did HD exclusively until PD re-established (AVF/AVG well established when BMD initiated)
    - ‘Social choices’ could be more easily accommodated (ie. travel/holidays)
    - Mean body weight did not change
    - Peritoneal membrane transport did not change

REPORTED EXPERIENCE AND OUTCOMES

- Agarwal M, Burkart JM et al. PDI 2003;23 (USA)
  - Data on 31 pts collected from multiple centers
    - Main clinical indications for offering BMD:
      - Inadequate solute clearance (34%)
      - Insufficient ultrafiltration/refractory volume overload (16%)
      - Neuropathy (11%)
      - Misc.: pregnancy, pericarditis, cardiomyopathy, abdominal hernia, dialysate leak
    - Mean time on PD prior to BMD was 3-4 yrs
    - 74% pts reported improvement in symptoms; 89% were happy with combined treatment; 14% had access problems
    - Center reimbursed for PD 6d/wk, HD once/wk

MEDICAL INDICATIONS FOR HYBRID DIALYSIS

- Inadequate solute removal/ uremic Sx
- Insufficient ultrafiltration; refractory chronic volume overload
- Hernia; dialysate leak
- (Noncompliance with home-based modality suspected)
- (‘Bridge’ to transplantation in near future)
- ?Preservation of peritoneal membrane

PSYCHOSOCIAL FACTORS THAT INFLUENCE DECISION TO DO PD+HD

- Geographical challenges to doing hemodialysis alone; unable to do HHD
  - Pt resides in remote/rural area, inadequate space/water, etc. for HHD, no HD unit nearby
- Employment/work schedule
- Travel
- Patient choice; doesn't want to give up PD
- Social isolation doing home modality
- Patient/caregiver burned out from long-term self-management

ADVANTAGES OF HYBRID DIALYSIS

- Improved solute clearance
- Improved volume/BP control
- Improved quality of life
- Patient independence/choice maintained
- Maintains ability to travel (if pt has significant RRF, may be feasible to switch to PD alone for limited timeframe)
- Seamless transition to single modality if access problems
- Preservation of peritoneal membrane function?
- Preservation of RRF?

CHALLENGES/PITFALLS

- Two accesses required; increased risk of infectious complications
- If doing HHD/CCPD, extensive space required to store supplies/equipment; labor/time-intensive
- Increased cost/resources
- Reimbursement issues
- Difficult to determine when to d/c PD (long-term PD may increase risk of EPS); suggested to switch to HD alone when PET changes significantly (permeability increasing)

HYBRID DIALYSIS: SUMMARY

- Historically, PD+HD therapy utilized in uremic PD pts without RRF who had well preserved peritoneal membrane function
- Physician bias usually leans toward complete switch from PD to HD when adequate solute clearance and/or UF can't be achieved with 'maximum' PD Rx
- **Studies have demonstrated that PD+HD results in improved BP/volume control, improved solute clearance, improved symptoms and better QOL**

HYBRID DIALYSIS: SUMMARY

- Initiating PD as first choice, adding HD when indicated, then eventually switching to HD alone fits well with concept of **integrated care**
- Combined therapy at onset of need for RRT better approach for subset of patients?
- Hybrid dialysis may expand choice of PD Rx

How will my own practice change?

- Be sensitive to ‘early’ signs of medical and/or psychosocial deterioration while on PD, discuss PD+HD as a possible option with all patients I would have historically switched to HD alone
- Establish vascular access early in ‘at risk’ pts on PD:
  - Large body mass, rapidly deteriorating RRF, poor UF/increased peritoneal membrane permeability, severe cardiomyopathy
- **Think ‘outside the box’!**

OUR MISSION

As nephrologists, we offer and administer chronic life support therapies.

Our goal is to prolong life while maintaining quality of life. Patient choice is an essential factor in achieving this.