COMPARISON OF AMBULATORY CENTRAL AND PERIPHERAL BLOOD PRESSURE BETWEEN THE SECOND AND THIRD DAY OF A LONG (3-DAY) INTERDIALYTIC INTERVAL IN HEMODIALYSIS PATIENTS.

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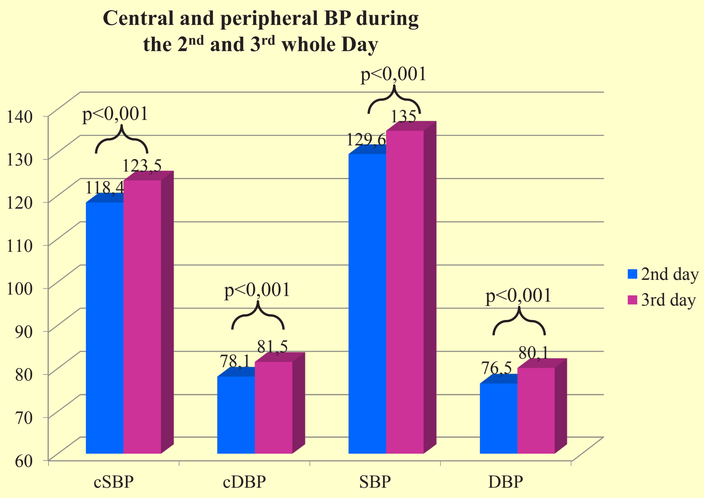
Backgrounds:

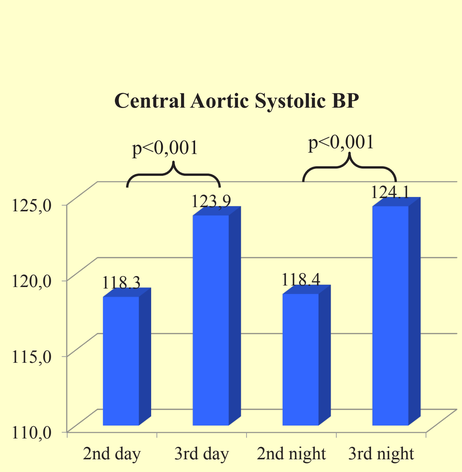
The conventional thrice-weekly hemodialysis schedule includes two regular (about 2 days) and one long (about 3 days) interdialytic interval periods. During the long interval patients have to deal with a larger amount of metabolic products and volume accumulation and recent data suggest that the end of the 3-day period associates with the highest cardiovascular risk. Despite of that, usually in clinical practice there is no difference in medication prescription and there is no data about the changes in peripheral and central aortic blood pressures during the third day of the larger interval period. This study compared for the first time ambulatory central blood pressure between Day 2 and Day 3 of a long interdialytic interval.

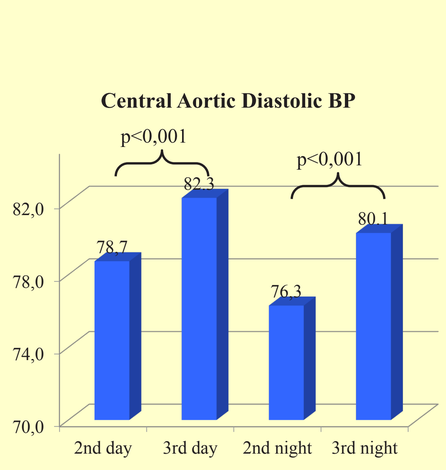
Materials and Methods:

To investigate this, we enroll 58 hemodialysis patients (mean age 63.2±14.3 years and median duration in dialysis 29 months) to a 72 hour Ambulatory Blood Pressure Monitoring on the large interdialytic interval, using the newly commercially available Mobil-O-Graph device (IEM, Stolberg, Germany). Mobil-O-Graph is a novel validated brachial cuff-based automatic oscillometric device that records brachial blood pressure and pulse waveforms and calculates central BP through mathematical transformation that is validated too. We compare the second vs third day and night ambulatory BP.

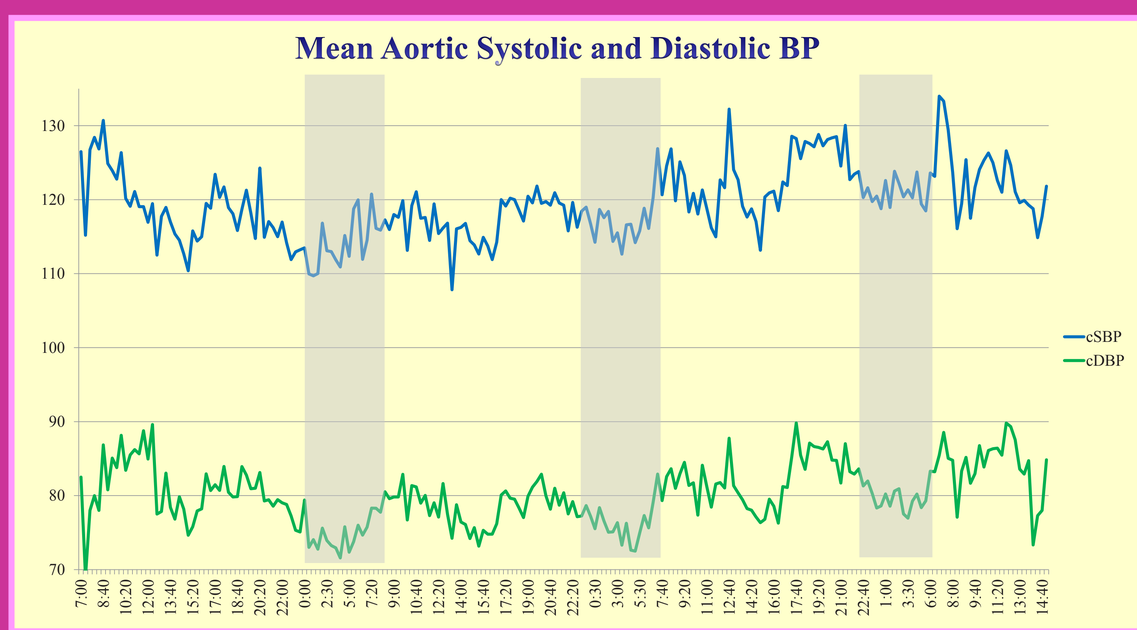
Results:





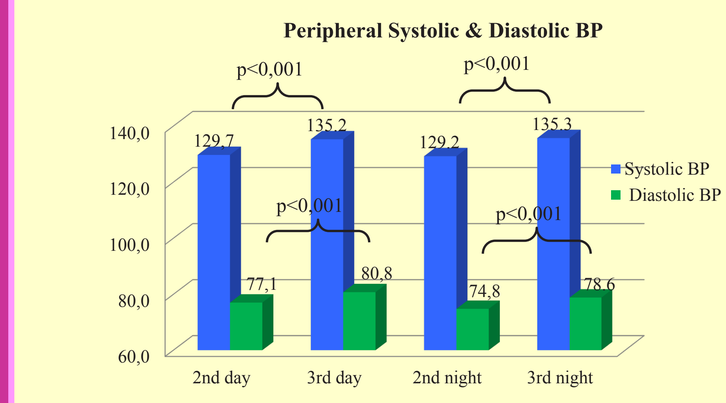


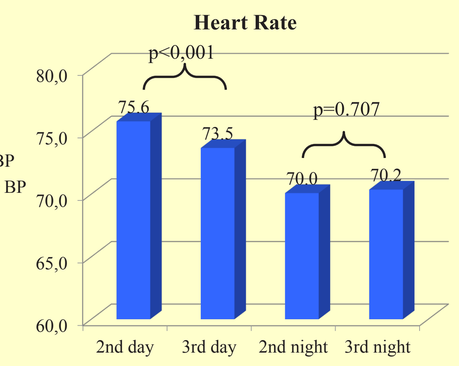
Parameter	Day (2)	Day (3)	P
24-hour period			
Aortic SBP (mmHg)	118.3±16.8	123.7±16.6	<0.001
Aortic DBP (mmHg)	78.7±12.2	82.3±11.8	<0.001
Aortic PP (mmHg)	40.3±10.3	42.1±11.2	0.002
Brachial SBP (mmHg)	129.6±20.0	135.0±20.0	<0.001
Brachial DBP (mmHg)	76.5±11.9	80.1±11.5	<0.001
Brachial PP (mmHg)	53.1±14.1	54.8±14.3	0.001
Heart rate (bpm)	74.1±9.8	72.9±9.7	0.012
Day-time period			
Aortic SBP (mmHg)	118.3±16.8	123.7±16.6	<0.001
Aortic DBP (mmHg)	78.7±12.2	82.3±11.8	<0.001
Aortic PP (mmHg)	39.5±10.3	41.3±10.9	0.003
Brachial SBP (mmHg)	129.7±20.0	135.2±20.1	<0.001
Brachial DBP (mmHg)	77.1±12.2	80.8±11.5	<0.001
Brachial PP (mmHg)	52.6±13.8	54.4±14.3	0.002
Heart rate (bpm)	75.6±10.5	73.5±10.0	<0.001
Night-time period			
Aortic SBP (mmHg)	118.4±20.0	124.0±19.7	<0.001
Aortic DBP (mmHg)	76.3±13.1	80.1±13.7	<0.001
Aortic PP (mmHg)	42.1±12.4	43.9±13.3	0.065
Brachial SBP (mmHg)	129.2±22.7	135.3±23.0	<0.001
Brachial DBP (mmHg)	74.8±12.8	78.6±13.0	<0.001
Brachial PP (mmHg)	54.4±15.7	56.6±16.2	0.007
Heart rate (bpm)	70.1±9.2	70.4±9.9	0.597



Dippers

	Systolic BP	Diastolic BP	Both
1st night	15	22	14
2nd night	6	11	6
3rd night	7	11	5
All nights	1	1	1





Conclusions:

This is the first study evaluating central BP during a 72-hour interval in hemodialysis patients. The significant increase in central BP during Day 3 follows the same pattern with that of peripheral BP and may be a mechanism of elevated cardiovascular risk at the final hours of the week in this population.

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