

Introduction

- Intradialytic hypertension (IH,) where blood pressure (BP) increases throughout dialysis or from pre- to post- dialysis, is reported to occur regularly in 10 to 15% of hemodialysis (HD) patients.¹
- IH is associated with increased hospitalization, cardiac and all-cause mortality risk.¹
- Proposed pathophysiological mechanisms include extracellular volume overload and increased vascular resistance.
- This study aimed to establish the prevalence of intradialytic hypertension within the hemodialysis population at Vancouver General Hospital and explore whether previously identified associated factors applied to our hemodialysis patients.

Methods


- A convenience sample of charts were reviewed to include patients attending hemodialysis on Tuesdays.
- Patient age, time on dialysis, anti-hypertensive medications, recent labwork (serum phosphate, pre dialysis urea and albumin) and cardiovascular comorbidities were recorded.
- From a single hemodialysis session each patient's goal weight (GW,) intradialytic weight gain, total ultrafiltration and dialysate sodium were recorded.
- Pre and post blood pressures from 6 consecutive sessions were reviewed. Intradialytic hypertension was defined as a rise in BP from pre to post hemodialysis of ≥ 10 mmHg in 4 of 6 sessions.
- Patients on midodrine, inpatients, those dialyzing off schedule and those in whom a goal weight was being established were excluded.



Results

- 119 charts were reviewed and data recorded for 97 patients
 - 22 excluded: 8 inpatients, 4 new start or goal weight probing, 7 on midodrine, 1 nocturnal patient, 1 patient absent, 1 weekly HD.
- Intradialytic hypertension was identified in 22 patients (23%)
- 74 (76%) of patients had at least 1 episode of IH recorded in the 6 sessions reviewed
- Comparing the group of patients with IH to the group without:
 - the average age was similar
 - those with IH had a shorter dialysis vintage
 - average GW was similar
 - average intradialytic weight gain was lower in the patients with IH
 - ultrafiltration volumes were lower in patients with IH
 - numbers of antihypertensive medications used was similar
 - average serum phosphate, albumin and pre dialysis urea were similar
 - average dialysate sodium was the same

	Intradialytic hypertension (n=22)	Without intradialytic hypertension (n=75)
Average age (years)	74	72
Dialysis vintage (months)	24	42
Average goal weight (kg)	63.8	66.3
Average intradialytic weight gain (kg)	1.6	2
Average intradialytic weight gain as percentage of estimated goal weight (%)	2.6	3.1
UF volume (L)	1.7	2.3
Average number of antihypertensive medications	2	1.5
Average serum phosphate (mmol/L)	1.56	1.52
Average serum albumin (g/L)	32	33
Average pre dialysis urea (mmol/L)	24.5	22.3
Average dialysate sodium	139	139



Results

- 52% (50) of all patients had a history of cerebrovascular accident (CVA) or transient ischemic attack (TIA,) coronary artery disease (CAD) or peripheral vascular disease documented in their HD chart.
- At least one vascular comorbidity was recorded in 45.5% of patients with IH and 54.1% of patients with out IH.
- Prevalence of CVA/TIA, CAD and PVD was comparable in the 2 groups.
- In the group with IH average pre-HD systolic BP was 135 in comparison to 144 in the group without IH.

	CVA/TIA	CAD	PVD
IH (n=22)	22.7% (5)	27.3% (6)	13.6% (3)
Without IH (n=75)	14.7% (11)	36% (27)	22.6% (17)

Conclusion

- Recurrent intradialytic hypertension occurred in almost a quarter of patients, with with three quarters of patients experiencing at least one episode of IH in the 6 HD sessions reviewed.
- In this set of patients, intradialytic hypertension appeared to be associated with shorter dialysis vintage, lower intradialytic weight gains and subsequent smaller ultrafiltration volumes, which was in keeping with previous studies.
- Patients with IH average pre-dialysis systolic BP were almost 10mmHg lower than those without IH, also in keeping with previous studies.
- These findings support the theory that patients with IH may present to the dialysis unit with normal or only modestly elevated pre-dialysis BP and as a result remain silently volume overloaded.
- Almost half of the patients with IH had documented vascular comorbidities, highlighting the need for proactive intervention in this group who have additional increased associated mortality risk.
- This data informs future quality improvement projects aimed at optimizing the management of intradialytic hypertension in he

