

Prospective analysis of utility and feasibility of ambulatory blood pressure monitoring service in a pediatric nephrology set up

Sir,

Despite ambulatory blood pressure monitoring (ABPM) becoming standard of care in adult practice^[1] as well as its strong recommendation in pediatric hypertension (HT) guidelines^[2,3] there are very few reports on its utility and feasibility in children from emerging economy and none from Indian subcontinent.^[4] We hereby present a prospective analysis of an ABPM service initiated in February 2012. Pediatric ABPM service was initiated with Welch Allyn 6100 monitor using appropriate blood pressure (BP) cuff sizes. It was offered to all children above 5 years of age with incidental (without any obvious underlying reason for HT) clinic blood pressure (CBP) persistently $\geq 95^{\text{th}}$ percentile (p) but $\leq 99^{\text{th}}$ p +5 mm Hg or as a standard of care for children with chronic kidney disease (CKD) (\geq stage 3), post renal transplant (RTx), solitary kidney, renal scar, and post-op for coarctation of the aorta. The American Heart Association (AHA) recommendation^[2] was taken as standard and ABPM limits were set accordingly. Height was used for estimating the ABPM limits or age if height was less than 120 cm.^[2,3] Interpretation was as per AHA suggestions-normal: (CBP $< 95^{\text{th}}$ p, mean ABPM $< 95^{\text{th}}$ p and systolic load (SL) $< 25\%$), white coat hypertension (WCH): (CBP $> 95^{\text{th}}$ p, mean ABPM $< 95^{\text{th}}$ p and SL $< 25\%$), masked hypertension (MH): (CBP $< 95^{\text{th}}$ p, mean ABPM $> 95^{\text{th}}$ and SL $< 25\%$), pre-HT: (CBP $> 95^{\text{th}}$ p, mean ABPM $< 95^{\text{th}}$ p and SL $> 25\%$ but $< 50\%$), ambulatory hypertension (AH): (CBP $> 95^{\text{th}}$ p, mean ABPM $> 95^{\text{th}}$ p and SL $> 25\%$,

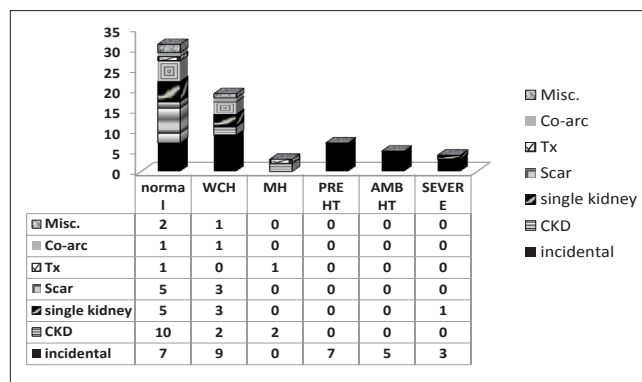


Figure 1: Outcomes of the ambulatory blood pressure monitoring. ABPM = ambulatory blood pressure monitoring, CKD = Chronic Kidney Disease, Co – arc = co-arc tation, HT = hypertension, MH= masked hypertension, Misc = miscellaneous, Tx = Renal transplant

but $< 50\%$) and severe AH: (CBP $< 95^{\text{th}}$ p, mean ABPM $< 95^{\text{th}}$ p and SL $> 50\%$). Until 31st March 2013; 69 children had ABPM (26% female) with the median age of 9.2 years (range 5-18). As per the AHA recommendation all of them had at least one reading per hour and the total number of readings were greater than 40 (median number of total reading was 52 with range 41-72). Sleep diary was used to ascertain day and night time. Underlying reason for undertaking ABPM and the outcome are shown in Figure 1. Incidental HT was the most common underlying reason. WCH was found in 27% ($n = 19$) of the total subjects and MH in 4% ($n = 3$). On analysis of utility; ABPM resulted in definite change in management in 36% of the cases ($n = 25$). Whereas WCH was detected in 19 children MH was detected in three cases (all three cases were of CKD including one post RTx). In addition, anti-hypertensive medications were increased in another three cases of known hypertensive wherein ABPM showed severe ambulatory HT although CBP was only around 95th percentile. In conclusion, similar to western literature^[2] we also found a high incidence of WCH (27%) as well as MH (21% among CKD and RTx). Diagnosis of WCH does avoid further costly investigation as well as use of anti-hypertensive medications,^[5] whereas diagnosis of MH can result in more effective control of BP which is likely to result in improved renal outcome. Although small in numbers, our study supports the use of pediatric ABPM even in Indian circumstances and should encourage its increased utilization.

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