



Sri Aurobindo Institute of Medical Sciences

Oral Paper Presentation

Clinic based measurement of Central Aortic Systolic Pressure – Practical utility and advantages.

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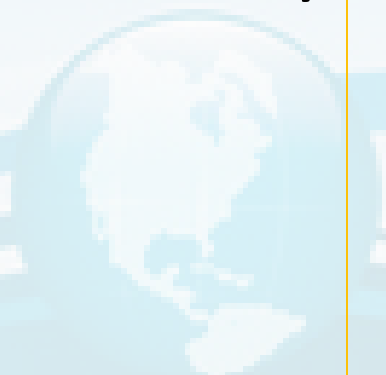
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Background

- ❖ Central aortic blood pressure is established as a strong predictor of cardiovascular events independent of the brachial blood pressure especially in patients with chronic kidney disease (CKD).

Conti. Background

❖ Central aortic systolic pressure (CASp) is one of the surrogate marker of large artery stiffness which in turn influences microcirculation of brain and kidney as also the ventricular workload and coronary perfusion .



Conti. Background

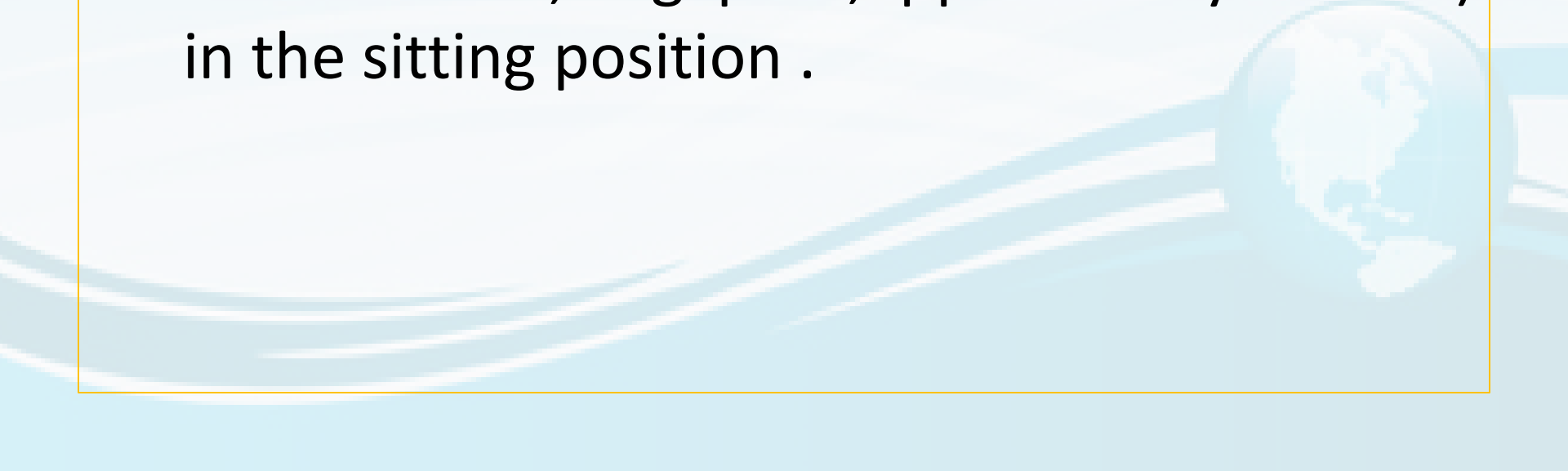
- ❖ Simple and noninvasive devices are now validated worldwide to measure CASP in outpatient clinics.
- ❖ However there is lack of data on CASP and it's significance in our Indian subjects .



Aims and Objectives:

1. To measure CASP across a cross-section of our patient population and assess the demographic profile using A-Pulse CASP device .
2. To compare and analyse CASP measurements vs brachial blood pressure measurements in patients (pts) with Hypertension and CKD.

Materials & Methods

- ❖ Basic demographic and anthropometric data was recorded .
 - ❖ Brachial BP was measured by oscillometric method using A-Pulse device (Healthstats International, Singapore, approved by USFDA) in the sitting position .
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Conti. Materials & Methods

- ❖ CASP was then measured by applanation tonometry and radial transfer function technique by placing the sensor of the A-Pulse CASP device over the ipsilateral radial artery .

Results

- ❖ 90 consecutive subjects (males-60;females-30) with mean age 47.11 ± 14 years were included in the study .
- ❖ Subgroups were : Group A- Normotensive healthy volunteers (n=25) ; Group B – pts with Hypertension without CKD (n=16) ; Group C – pts with CKD ,stage 1-4 (n=27) and Group D –with CKD - 5D ,on hemodialysis (n=22).

Conti. Results

❖ In Group A ,mean CASP (115 ± 10.8) values across all age groups corresponded to the age censored worldwide reference range ,while in groups B,C and D , 51/65 (78%) pts had mean CASP values significantly higher($p < 0.05$) than the age censored reference range .

Conti. Results

- ❖ Subjects with normal Brachial Pulse Pressure (< 50 mmHg , $n=40$) had near normal mean Brachial systolic BP [BASP](124.98 ± 14.27) and CASP (117.35 ± 13) ,while those with high Brachial Pulse Pressure (>50 mmHg, $n=50$) had correspondingly higher mean BASP(147.48 ± 14.84) and CASP (136.2 ± 15.36) values when compared to the age censored reference range .
- ❖ In the latter subgroup , younger subjects (age <50 years, $n=23$) had more significant elevation of CASP (136.73 ± 13.94) than BASP (148.26 ± 13.40) ($p<0.05$) .

❖ 30/55 pts with high BMI (>25 kg/sqm) in younger age group (age < 50 years) had comparable BASP (135.9 ± 16.91), but mean CASP (126.9 ± 15.32) was significantly higher ($p < 0.05$) than age censored reference range.



- ❖ Literature shows that the mean difference between absolute CASP and BASP values narrows down with advancing age in normal people and this is confirmed in our normal volunteers.
- ❖ In groups B, C and D the mean difference between BASP and CASP was similar (10.8 vs 9.3) in younger (age <50 years , n= 29) versus older (age>50 years= 36) age group; thus emphasizing that younger pts with hypertension and CKD exhibit accelerated vascular ageing .

❖ Patients (n=22) having longer duration (>5 years) of CKD had significantly higher CASP (136 +17 vs 127+14 ; p value) as compared to pts (n=27) with lesser duration of CKD (< 5 years).



Conclusion

- ❖ Our study validates the use of A-pulse device for measurement of CASP.
- ❖ CASP measurement may be better than BASP measurement in identifying high CV risk early in young and obese individuals.

- ❖ Younger patients with hypertension and CKD having high brachial pulse pressure (>50 mmHg) should undergo central BP assessment.
- ❖ Office based measurement of CASP is a necessary additional tool for thorough cardiovascular risk assessment, especially in patients with CKD.



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Thank You

