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LETTER TO THE EDITOR

DICROTIC WAVE AND ANTHROPOMETRY

Sir,

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Pulse is not only an important vital sign for the life but it is also a very important diagnostic measure. Sushrutha (500 B.C.), Canon (130 A.D.), Zohravi (936 A.D.) and Avicenna (980 A.D.) described various types of the pulse and their importance in clinical practical. Dudgeon, Mary Sanderson and Mckenzi in the beginning of the 20th Century devised various Sphymographs. Hamilton and Taylor 1937 recorded pulse in various animals and related the Dicrotic Wave to the size and shape of the body.

This study has been undertaken to find out any relation between the pulse and human Anthropometry. The study included, 140 healthy adult males of various ages ranging from 22–65 years. Pluse was recorded on student's physiograph from the proximal phalanx of the right index finger in sitting posture after 15 minutes of physical rest. Height was recorded in cms without shoes, weight was recorded in kgs on Avery weighing machine and the chest circumference was measured at the level of the nipples during full inspiration and at the end of expiration with the measuring tape. 69.3% tracings showed a Dicrotic wave on the Catacrotic limb, whereas remaining 30.7% tracings were without Dicrotic wave.

When the Anthropometric measurements and the age was compared for the two groups, the following points were noted.

1. Age: Incidence of Dicrotic Wave becomes less as the age advances especially after 30 years (P<.001)
2. Height: Dicrotic Wave is less common in individuals having height less than 170 cms (P < .001)
3. Weight: Percentage of individuals without Dicrotic Wave is more in low weight groups. But the difference is not statistically significant.
4. Chest circumference: Dicrotic wave is commonly absent in individuals with broad chest circumference.
5. Body mass index (BMI): Dicrotic wave is frequently absent in individuals with higher BMI (>25)

The classical observation in sphygmographic studies is that on the Catacrotic limb of the pulse tracing i.e., on

TABLE I : Observations

Sl. No.	*Parameter*	Without dicrotic notch (n=43)	*With dicrotic notch (n=97)*	*Probability (P value)*
1.	Age	39.0 ± 16.55	25.51 ± 8.38	P < 0.001
2.	Height (cms)	166.46 ± 5.08	171.93 ± 6.67	P < 0.001
3.	Weight (kgs)	59.35 ± 13.75	61.94 ± 12.24	P > 0.05
4.	Chest (cms)	87.58 ± 8.89	85.40 ± 8.01	P > 0.05
5.	BMI $Wt/(Ht)_2$	21.31 ± 4.36	20.84 ± 3.76	P > 0.05

the downstroke, there is a notch known as the Dicrotic notch which is caused by

1. Rebound of the blood when aortic value closes.
2. Reflection of the waves from the periphery.

Further, studies indicated that the Dicrotic notch depends upon the duration of ejection phase, the size and the shape of the body. Notch is absent in smaller animals or if ejection period is longer, or less branching of the arterial system, or less vascular tone (vasodilatation). In humans, and some higher animals like sheep, dogs and rabbits, the duration of systole is relatively short, in relation to the total cardiac cycle. Therefore their pulse shows a dicrotic notch. In smaller animals, such as mice, rats and guinea pigs, duration or ejection is long. Therefore Dicrotic notch is absent or insignificant. It has also been reported that Wombat is having long body, short limbs and frequent braching of the vascular tree, shows a prominent dicrotic notch. On the other extreme, snakes having a long body with even branching, showed no evidence of wave reflection (1, 3).

The Unani, Indian and Chinese systems of Medicine relate the body size and shape with type of pulse. Our study confirms this relationship mainly with the height, chest circumference and the age. Further large scale study is required to formulate any mathematical relationship between the pulse and Anthropometric measurements.

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