The Value of Carina Angle Measurement for the Diagnosis of Patent Ductus Arteriosus

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Introduction: Bedside diagnosis of patent ductus arteriosus (PDA) continues to maintain its importance particularly when echocardiography is not available at the moment In our study we aimed to assess whether the widened carina angle (CA) displayed on X-ray supports the presumptive presence of PDA.

Methods: The study group was consisted by 60 infants under 37 weeks diagnosed with hemodynamically significant PDA, based on clinical and echocardiographic findings. The control group was consisted by 60 infants with no clinical or echocardiographic evidence of PDA. In both groups, the location of the left main bronchus was assessed by measuring the angle between two main bronchi at the level of carina.

Results: In the comparison between two groups, a significant widening of carina angle was found in PDA group and while the interquartile range (IQR) was found as 69- 108 °, the median was found as 89° and the mean was 87.26 ° (± 7.01 °) in PDA group, these values were found as 57–89°, 66.5° and 67.4° (± 7.33°) respectively, in the control group (p < 0.001). A cut-off point of 73.5 ° signified the highest sensitivity (97%) and specificity (55%). We found a significant and positive correlation between the increased CA values and PDA occurrence (p< 0.01). When PDA was closed these values were respectively 63-88°, 74.5° and 74.7° (±6.4°) (p<0.001).

Conclusions: We demonstrated that the probability of the appearance of a widened CA on X rays was increased by the presence of PDA. Similarly, a CA angle narrower than 73.5 ° and a negative predictive value of 93% eliminate the diagnosis of PDA. CA is a reliable and widely available tool in making the diagnosis of PDA.