Neonatal balloon aortic valvuloplasty-predictive value of current risk score algorithms for treatment strategies.

Abstract:
Neonatal valvular aortic stenosis (AoS) represents a spectrum of different degrees of hypoplasia and malformation of all left heart structures. Uncertainty exists on threshold values for biventricular circulation of newborns with critical AoS. Our aim was to assess the predictive value of current risk scores for treatment strategies in critical AoS. The echocardiograms of all newborns with AoS treated by balloon valvuloplasty (AoVP) or Norwood operation between January 2006 and September 2008 were reviewed retrospectively and the Rhodes-, Colan-score and the univentricular repair survival advantage (UVR-SA) tool were applied. The results were compared to the actual outcome. Out of 28 patients 19 were treated by an initial AoVP and nine by an initial Norwood operation. In three a secondary Norwood operation was done. According to the Rhodes-score 24 patients should have been treated by a univentricular strategy but 12 of them (50%) live with biventricular circulation. The Colan-score resulted in 19 univentricular decisions and 7 (37%) of these patients now live with biventricular circulation. Applying the UVR-SA tool 2/12 (17%) patients predicted for a univentricular strategy received successful biventricular circulation and 2/16 (12%) of the suggested biventricular patients have a univentricular circulation. Hence, 14/28 (50%) patients had discordant treatment decisions. No prospectively
tested criteria for patient selection (biventricular vs. univentricular) are available for critically ill newborns with AoS. Retrospective application of the current risk scores showed unsatisfactory results. Treatment decisions are based on local experience and expertise.