

Strain and Strain Echocardiography in Children with Wilson's disease

Karakurt C. (1), Çelik S (1), Selimoğlu A (2), Varol IF (2), Karabiber H (2), Yoloğlu S (3).

1.Inonu University , Faculty of Medicine, Department of Pediatric Cardiology, Malatya , Turkey

2.Inonu University, Faculty of Medicine, Department of Pediatric Gastroenterology, Malatya, Turkey

3.Inonu University, Faculty of Medicine, Department of Biostatistics, Malatya, Turkey

Objective: The study aimed to evaluate strain and strain rate echocardiography in children with Wilson disease to detect early cardiac dysfunction.

Methods: In this study, consisted of 21 patients with Wilson's disease and a control group consisted of 20 ages and gender matched healthy children. All patients and control group was evaluated with 2D and colour coded conventional transthoracic echocardiography by using same echocardiography machine (Vivid E9, GE Healthcare) , longitudinal, transverse radial strain and strain rate were assessed according to the recommended by American Society of Echocardiography. 2D strain and strain rate measurements were performed by using ECHOPAC software package. **Results:** Global strain and strain rate:

Wilson group have statistically significant lower peak 'A' longitudinal velocity of the left basal point and peak 'E' longitudinal velocity of the left basal point, and higher global peak 'A' longitudinal/circumferential strain rate according to the control group ($p<0.05$).

Radial strain and strain rate

End systolic rotation was measured statistically lower values in Wilson group ($p<0.05$). Segmental analysis showed that rotational strain measurement of anterior segment of Wilson group was measured statistically significant lower values in Wilson group and lateral segment of Wilson group. **Longitudinal strain and strain rate**

Four chambers: End-systolic longitudinal strain and positive peak transverse strain was statistically low in Wilson group ($p<0.05$). Segmental analysis showed statistically significance low values of end systolic longitudinal strain of basal lateral ($p<0.05$) and statistically significance low values of end-systolic longitudinal strain of basal-septal segment ($p<0.05$) in Wilson group.

Two chambers: End-systolic longitudinal strain and positive peak transverse strain was statistically low in Wilson group and segmental analysis showed statistically significance low values of end-systolic longitudinal strain of midanterior and basal-anterior segment ($p<0.05$) in Wilson group.

Long axis: Segmental analysis showed that end systolic longitudinal strain measurements of basal posterior and mid-posterior segments statistically lower values in Wilson group ($p<0.05$). End-systolic longitudinal displacement of basal posterior, mid-posterior, mid-antero-septal segments statistically lower values in Wilson group ($p<0.05$).

Conclusion: In our study showed that, despite normal systolic functions, patient with Wilson disease shows diastolic dysfunction and regional deformation abnormalities especially rotational strain and strain rate abnormalities.