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ORIGINAL ARTICLE

Evaluation of Inter-atrial Septal Defect Diameter and Left Ventricular Systolic Function in Children with Ostium Secundum Atrial Septal Defect in Enugu, Nigeria

Évaluation du Diamètre de la Communication Interauriculaire et de la Fonction Systolique Ventriculaire Gauche Chez les Enfants Atteints de Communication Interauriculaire Type Ostium Secundum à Enugu, Nigéria.

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ABSTRACT

BACKGROUND: Children with ostium secundum atrial septal defect (OS ASD) usually present with varying degrees of ventricular dysfunction.

OBJECTIVES: This study aimed to evaluate the left ventricular systolic function of children with OS ASD compared with control.

METHODS: This was a cross-sectional study involving 113 children with OS ASD and 113 age- and sex-matched controls. Their age ranged from 1 month to 16 years. There were 49 males and 64 females in each group. Left ventricular systolic function of children with isolated OS ASD were compared with that of controls using echocardiography. Subjects and controls who fulfilled the inclusion criteria were consecutively recruited in the study. The data elicited from the study were analyzed with the IBM SPSS version 20 (IBM Corp, Chicago).

RESULTS: The mean left ventricular mass (LV mass) of the control, 93.9 ± 113.6 gm was significantly higher than that of subjects with OS ASD, 39.4 ± 74.3 gm, (Mann Whitney U = 4,266, $p < 0.001$). Similarly, the mean left ventricular internal diameter in diastole (LVIDd) of the control, 25.8 ± 11.7 mm was significantly higher than that of participants with OS ASD, 19.9 ± 7.1 mm (Mann Whitney U = 4,522, $p < 0.001$). The mean interventricular septal diameter in systole (IVSs) of the control, 7.2 ± 3.5 mm was higher than that of participants with OS ASD, 5.0 ± 1.9 mm and the mean difference was found to be statistically significant, (Student t = 5,738, $p < 0.001$). The mean left ventricular internal diameter in systole (LVIDs) of the control, 16.2 ± 7.6 mm was significantly higher than that of participants with OS ASD, 12.9 ± 5.8 mm, (Student t = 3,660, $p < 0.001$). There was no significant correlation between the size of inter-atrial septal defect of children with OS ASD and left ventricular systolic function and age : (Corr. Coef. 0.065, $p = 0.492$) ; EF(Corr. Coef. 0.121, $p=0.202$), FS (Corr. Coef. 0.139, $p=0.143$)

CONCLUSION: Children with OS ASD had lower left ventricular mass compared with those with control. Females seem to have higher function than males. **WAJM 2024; 41 (3): 251 - 257.**

KEYWORDS: Left ventricular function; Ostium secundum atrial septal defect (ASD); Inter-atrial size septal defect; Children; Echocardiography.

RÉSUMÉ

CONTEXTE: Les enfants atteints de communication interauriculaire type ostium secundum (CIASOS) présentent généralement des degrés variables de dysfonction ventriculaire.

OBJECTIFS: Cette étude visait à évaluer la fonction systolique ventriculaire gauche des enfants atteints de CIASOS par rapport à des témoins.

MÉTHODES: Il s'agissait d'une étude transversale portant sur 113 enfants atteints de CIASOS et 113 témoins appariés selon l'âge et le sexe. Leur âge variait de 1 mois à 16 ans. Il y avait 49 garçons et 64 filles dans chaque groupe. La fonction systolique ventriculaire gauche des enfants présentant un CIASOS isolé a été comparée à celle des témoins à l'aide de l'échocardiographie. Les sujets et les témoins qui remplissaient les critères d'inclusion ont été recrutés consécutivement dans l'étude. Les données recueillies ont été analysées avec la version 20 d'IBM SPSS (IBM Corp, Chicago).

RÉSULTATS: La masse moyenne du ventricule gauche (VG) du groupe témoin, $93,9 \pm 113,6$ g, était significativement plus élevée que celle des sujets atteints d'OS ASD, $39,4 \pm 74,3$ g (Mann-Whitney U = 4,266, $p < 0,001$). De même, le diamètre interne moyen du ventricule gauche en diastole (LVIDd) du groupe témoin, $25,8 \pm 11,7$ mm, était significativement plus élevé que celui des participants atteints d'OS ASD, $19,9 \pm 7,1$ mm (Mann-Whitney U = 4,522, $p < 0,001$). Le diamètre moyen du septum interventriculaire en systole (IVSs) du groupe témoin, $7,2 \pm 3,5$ mm, était plus élevé que celui des participants atteints d'OS ASD, $5,0 \pm 1,9$ mm, et la différence moyenne était statistiquement significative (Student t = 5,738, $p < 0,001$). Le diamètre interne moyen du ventricule gauche en systole (LVIDs) du groupe témoin, $16,2 \pm 7,6$ mm, était significativement plus élevé que celui des participants atteints d'OS ASD, $12,9 \pm 5,8$ mm (Student t = 3,660, $p < 0,001$). Il n'y avait pas de corrélation significative entre la taille du défaut septal interauriculaire chez les enfants atteints d'OS ASD et la fonction systolique du ventricule gauche et l'âge : (Coef. Corr. 0,065, $p = 0,492$) ; FE (Coef. Corr. 0,121, $p = 0,202$), FS (Coef. Corr. 0,139, $p = 0,143$).

CONCLUSION: Les enfants atteints de CIASOS avaient une masse ventriculaire gauche plus faible que ceux du groupe témoin. Les filles semblaient avoir une fonction plus élevée que les garçons.

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MOTS-CLÉS: Fonction ventriculaire gauche; Communication interauriculaire type ostium secundum (CIASOS); Malformation septale interauriculaire; Enfants; Échocardiographie.

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Abbreviations: **EF:** Ejection fraction, **FS:** Fractionating shortening, **IVSd:** Inter ventricular septum diameter in diastole, **IVSs :** Inter ventricular septum diameter in systole, **LVIDd:** Left ventricular internal diameter in diastole, **LVIDs:** Left ventricular internal diameter in systole, **LVPWd:** Left ventricular posterior wall diameter in diastole, **LV mass :** Left ventricular mass, **OS ASD:** Ostium secundum atrial septal defect