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Efficacy on antimicrobial activity and immunoglobulin preservation on donor breast milk after flash heat treatment and holder pasteurization: A comparative study

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Human milk is considered the optimal nutritional source for infants. Breast milk is safe and contains proteins such as IgA, which offers passive protection for the gastrointestinal system. When breastfeeding is impossible, pasteurized human milk is considered the best alternative. Due to the possibility of microbial contamination during collection and handling, milk is pasteurized to prevent transmission of pathogens. In low income and remote areas where pasteurization is inaccessible, the pursuit for the best alternative in rendering donor milk safe still remains. This study aims to determine and compare the efficacy of flash heat treatment and holder pasteurization in preserving IgA while reducing bacterial contamination on donor breast milk. This is an experimental study utilizing pooled donor breast milk subjected to bacterial analysis using blood agar and MacConkey plates. IgA level determination pre and post flash heat treatment and pasteurization was performed using BINDARID Kit IgATM. 10 samples each of aliquoted breast milk were subjected to pasteurization and flash heat treatment. The two groups generated a statistically significant reduction in colony forming units observed using blood agar and MacConkey plates. These sample groups also underwent IgA level determination using BINDARID Kit IgATM and exhibited no significant decline in IgA level concentrations. This study suggests that flash heat treatment may be utilized as an alternative method in reducing bacterial contamination while maintaining immunoglobulin A levels, and is therefore able to provide safe and effective donor breast milk. Its impact may be applied to low income and remote areas where holder pasteurization is inaccessible.

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Assessment of double outlet right ventricle associated with multiple malformations in pediatric patients using dual-source computed tomography

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Double outlet right ventricle (DORV) is a complex congenital heart disease which is characterized by the two great arteries completely or predominately arise (>50%) from the right ventricle. It often accompanied by a serious of intra- and extra-cardiac malformations. Accurate preoperative evaluation is essential for surgeons. In recent years, dual-source computed tomography (DSCT), with its fast scanning speed, high imaging quality and low radiation dose, has evolved into a reliable tool for pediatric patients with congenital heart diseases. In our study, we enrolled 47 pediatric patients with DORV who received surgical interventions. All surgically confirmed malformations were categorized into the following four groups: intracardiac anomalies, coronary artery anomalies (CAAs), anomalies of great vessels, separate thoracic and abdominal anomalies. We evaluated the diagnostic accuracy between DSCT and transthoracic echocardiography (TTE) when compared with surgical results. According to the data from our study, DSCT was superior to TTE in demonstrating paracardiac anomalies (sensitivity, coronary artery anomalies: 100% vs. 80.00%, anomalies of great vessels: 100% vs. 88.57%, separate thoracic and abdominal anomalies: 100% vs. 76.92%, respectively). As for intracardiac anomalies, our study demonstrated that DSCT might miss some tiny anomalies. Even so, the diagnostic accuracy of DSCT was also satisfactory (sensitivity, 91.30% vs. 100%) in comparison with TTE. The estimated mean effective dose in our study was <1 mSv (0.88±0.34 mSv). Hence, combined with TTE, DSCT may reduce or even obviate the use of invasive cardiac catheterization, and thus exposing the patients in a much lower radiation dose.

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