Ibuprofen does not improve bronchopulmonary dysplasia outcomes

by **Jayden Berdugo** and **Kiera Liblik** — February 12, 2024 in **Obstetrics**, **Pulmonology**
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1. This randomized controlled trial showed no evidence that ibuprofen treatment for bronchopulmonary dysplasia reduced premature infant mortality.

2. This study is consistent with other studies examining the role of ibuprofen as a treatment method for patent ductus arteriosus (PDA), showing no effect on mortality rates.

Evidence Rating Level: 1 (Excellent)

Study Rundown: Neonatal medicine has advanced substantially in recent decades. Yet, the incidence of bronchopulmonary dysplasia has increased in preterm infants with associated mortality. There is a greater risk of death and bronchopulmonary dysplasia among infants who have a large (≥1.5 mm in diameter) PDA present for more than three days. Studies have previously tried using ibuprofen as a prophylactic treatment in preterm infants. However, this treatment was not associated with increased survival without neurosensory impairment. In this study, ibuprofen was studied in the context of bronchopulmonary dysplasia. Two severe adverse events occurred in the experimental group. Two serious adverse events happened in the control group, as well. There were no significant differences between the experimental and control groups for both the risk of death and the risk of bronchopulmonary dysplasia. Only 55.5% had a closed or small PDA in

infants assigned to take ibuprofen. As a result of a variety of factors, such as limiting drug availability, competing trials, and changes in clinical practice, the study did not reach the enrollment goal of 730 participants. In summary, ibuprofen was not found to be significantly associated with better outcomes in babies at 36 weeks post-partum.

Click here to read this study in the NEJM

In-Depth [randomized controlled trial]: The present study assessed the impact of ibuprofen on bronchopulmonary dysplasia outcomes in infants. Between July 2015 and December 2020, study participants ≤72 hours after birth with a large PDA born between 23 weeks and 28 weeks six days gestation were enrolled. The study randomized 653 infants into two groups, with 327 set to receive the placebo and 326 assigned to receive ibuprofen. Echocardiograms determined that 93.8% of the selected infants met the eligibility criteria. Out of 318 infants in the ibuprofen group, 220 (69.2%) developed a primary outcome event. Conversely, 202 out of 318 infants (63.5%) developed a primary event in the placebo group (adjusted risk ratio, 1.09; 95% Confidence Interval [CI], 0.98 to 1.20; p=0.10). In the ibuprofen group, mortality occurred in 44 out of 323 infants (13.6%). Comparatively, mortality occurred in 33 out of 321 infants in the placebo group (adjusted risk ratio, 1.32; 95% CI, 0.92 to 1.90). Another analysis was conducted on the infants that survived to the 36-week mark, determining the presence of bronchopulmonary dysplasia. The study suggests that 176 of 274 infants (64.2%) in the experimental group, and 169 of 285 infants (59.3%) in the placebo group died from moderate or severe bronchopulmonary dysplasia (adjusted risk ratio, 1.09; 95% CI, 0.96 to 1.23). Overall, the findings indicate that there is no significant evidence that suggests ibuprofen was associated with a lower risk of death or bronchopulmonary dysplasia when compared to the placebo.

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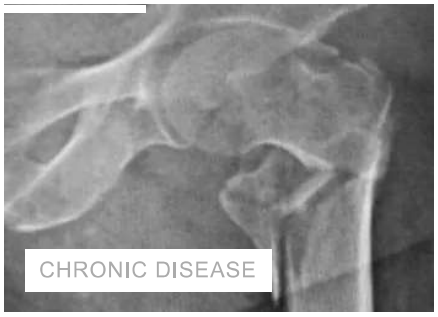

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