2. Fukuda J, Shingo Y, Miyako H. Primary tuberculous osteomyelitis of the mandible: A case report . Oral Surg Oral Med Oral Pathol 73; 278:1992.

3. Richard GT, Donald FB. Tuberculosis osteomyelitis of mandible. Oral Surg Oral Med Oral Pathol 1964; 18: 7-13.

4. Masaru Imamura, Toshio Kakihara, Kohsuke Yamamoto, Chihaya Imai, Atsushi Tanaka, Makoto Uchiyama. Primary Tuberculous osteomyelitis of the mandible. Ped Int 2004; 46: 736-737.

Acute Renal Impairment after Oral Ibuprofen for Medical Closure of Patent Ductus Arteriosus

Patent ductus arteriosus (PDA) is a common occurance in preterm infants with significant morbidities. Indomethacin, has been widely used to treat hemodynamically significant PDA. However, this agent can cause adverse reactions such as reduced renal, mesenteric, and cerebral perfusion leading to transient or permanent renal dysfunction, necrotizing enterocolitis, gastrointestinal hemorrhage, and intraventricular hemorrhage or periventricular leukomalacia(1). Research has shown that ibuprofen is as effective as indomethacin for achieving PDA closure with minimal adverse effects(2-3). However, before giving treatment an accurate echocardiography should rule out ductus dependent cardiac malformations, because ibuprofen/indomethacin can be dangerous and highly fatal in these conditions. This paper reports a preterm infant who was treated with oral ibuprofen and developed acute transient renal failure.

Case Report

An 880 g female infant was born at 29 weeks' gestation. At birth, the baby showed signs of RDS, and she required intubation and administration of exogenous surfactant. On day 7 of life, hemodynamically significant PDA was diagnosed by echocardiography. A course of ibuprofen starting at a dose of 10 mg/kg and followed by two doses of 5 mg/kg at 24 h and 48 h later was ordered. On day 3 of treatment, the infant's renal function deteriorated: blood urea nitrogen, 92 mg/dL; creatinine, 2.0 mg/dL; creatinine clearance, 5.1 mL/min/1.73 m^2. Fluid retention (> 5% actual weight), oliguria (0.5 mL/kg per h) and hyponatremia (113 mEq/L) were detected. Ultrasonographic examination of the renal system revealed no abnormalities. Three days later, the baby recovered full renal function.

Discussion

Reports have shown that infants with PDA who receive intravenous ibuprofen exhibit a less pronounced rise in serum creatinine and are less likely to develop oliguria than those who receive intravenous indomethacin(2-3). In Cochrane database review, they conclude that indomethacin should remain the drug of choice for the treatment of a PDA, because ibuprofen may increase the risk for chronic lung disease, and pulmonary hypertension has been observed in three infants(3).

A recent work on newborn rabbits has revealed that intravenous ibuprofen causes a dose-dependent significant reductions in urine volume, glomerular filtration rate, and renal blood flow, together with an increase in renal vascular resistance and a decrease in urinary sodium excretion(4). Ibuprofen may also cause tubulointerstitial nephritis.

Currently, recommended dose regimen of ibuprofen is 10-5-5 mg/kg at 24-h intervals. A recent study suggested that higher dosing (20-10-10) of ibuprofen may result in higher rates of closure, however, with increased risk of oliguria and renal complications(5).

It is important to underline that premature babies with immature organ systems are more susceptible to pharmacological interactions and this baby was also receiving aminoglycosides. Concomitant drugs influencing renal function would have an additive effect in renal impairment.

In conclusion, it is important that pediatricians

recognize ibuprofen has the potential to induce adverse renal side effects. Before starting treatment they should be sensitive to trade off between consequences of treating or not treating a PDA, weighing adequately the pros and cons of either the disease condition itself or the treatment for the same.

Filiz Tiker,
Selman Vefa Yildirim,
Department of Pediatrics,
Baskent Üniversitesi Adana Seyhan Hastanesi,
Gazipasa mahallesi,
Baraj yolu 1. durak, 01140,
Seyhan-Adana/Turkey.
E-mail: filiztiker@yahoo.com

REFERENCES

1. Van Bel F, Guit GL, Schipper J, Van de Bor M, Baan J. Indomethacin-induced changes in renal blood flow velocity waveform in premature infants investigated with color Doppler imaging. J Pediatr 1991; 118: 621-626.
2. Lago P, Bettiol T, Salvadori S, Pitassi I, Vianello A, Chiandetti L, *et al.* Safety and efficacy of ibuprofen versus indomethacin in pretem infants treated for patent ductus arteriosus: a randomised control trial. Eur J Pediatr 2002; 161: 202-207.
3. Ohlsson A, Walia R, Shah S. Ibuprofen for the treatment of patent ductus arteriosus in preterm and/or low birth weight infants. Cochrane Database Syst Rev 2005; (4): CD003481.
4. Chamaa NS, Mosig D, Drukker A, Guignard JP. The renal hemodynamic effects of ibuprofen in the newborn rabbit. Pediatr Res 2000; 48: 600-605.
5. Desfrere L, Zohar S, Morville P, Brunhes A, Chevret S, Pons G, *et al.* Dose-finding study of ibuprofen in patent ductus arteriosus using the continual reassessment method. J Clin Pharm Ther 2005; 30: 121-132.