

PDA in prematurity

2013/10(修)

一、Physical examination

asymptomatic in small PDA
Tachycardia, exertional dyspnea
Differential cyanosis in R to L shunt PDA
Hyperactive precordium, systolic thrill
Bounding pulses, decreased variability to HR
Continuous murmur

二、Cardiac echogram findings

large LA and LV in large shunt PDA
Check LA/AO ratio
(if <1.3 tiny PDA, 1.3-1.5 small PDA, 1.5-2 moderate PDA, >2 large PDA)

三、Fluid management

as that for prematurity
not above 130ml/kg/day in large shunt PDA or closed PDA in recent one week

四、Time to treatment

- prematurity and BBW < 1500gm---still unclosed PDA 3 days after birth
- prematurity and BBW > 1500gm—symptomatic PDA 7 days after birth

五、How to tx

- indomethacin or ibuprofen
- catheter closure with coil (while PDA < 0.5cm and body weight > 6kg)
- surgical ligation

Indomethacin treatment

1. contraindications to indomethacin therapy

- i. IVH within 7 days
- ii. NEC or suspected NEC
- iii. Pulmonary hemorrhage or other bleeding disorder
- iv. $\text{Cr} > 2.0(1.8)\text{mg\%}$
- v. Platelet $< 75,000(50,000)$
- vi. Urine output $< 1\text{ml/kg/hr}$
- vii. Low PO_2 , low hemoglobin, low BP

2. protocols for the use of indomethacin

- i. check Cr, Platelet count, urine output, brain sonogram and heart sonogram before indomethacin

ii. Dosage(mg/kg/dose) and time interval 12-24hrs

Age at 1st dose	1 st	2 nd	3 rd
< 48 hours	0.2	0.1	0.1
2-7days	0.2	0.2	0.2
$\geq 7\text{days}$	0.2	0.25	0.25

- iii. Hold indomethacin and prescribe lasix if urine output $< 1\text{ml/kg/hr}$
- iv. Check heart echo after whole course of indomethacin
- v. Adverse effect/precautions
 - a. If oligouria occurs, observe for hyponatremia and hypokalemia
 - b. Consider prolong the dosing interval of renal-excreted drugs (eg. Gentamicin)
 - c. Consider withholding feedings
 - d. Causes platelet dysfunction
 - e. Contraindicated in active bleeding, significant thrombocytopenia or coagulation defects, NEC and/or significantly impaired renal function
 - f. Reductions in organ blood flow may be associated with rapid($< 5\text{min}$) infusion .

ibuprofen treatment

- 使用劑量：每次間隔 24 小時

Time	1 st	2 nd	3 rd
dosage	10mg/kg	5mg/kg	5mg/kg

- 治療機轉

抑制前列腺素的合成，降低 PGE2 level，能有效使動脈導管內的肌肉收縮，進而使動脈導管關閉並減輕疾病症狀

- 副作用

對於感染、顱內出血、腸胃道出血、發炎、凝血異常、血小板不足、腎功能異常的病患須避免使用。有些患者使用此藥品可能會出現以下現象，須謹慎使用監控患者臨床狀況。

- 1). 抑制血小板的凝血功能，嚴重者導致胃腸道出血及顱內出血等。
- 2). 腦部血液灌注減少，導致腦部氧氣供應減少。
- 3). 胃腸道血液灌注減少，嚴重會造成壞死性腸炎。
- 4). 腎臟血液灌注減少，導致短暫腎功能衰竭，若持續給藥會導致無法回復的腎功能衰竭。

- PS. 使用過程中，若

UO < 0.8cc/kg/hr，請停止用藥

UO < 0.5cc/kg/hr，給予一次 lasix

- 給藥禁忌

- 1、有出血傾向
- 2、有壞死性腸炎
- 3、Creatinine > 1.7~2.0 mg/dL
- 4、BUN > 25 mg/dL
- 5、Platelet count < 60,000
- 6、Urine < 0.6cc/kg/hr。