

Prenatal diagnosis of fetal anemia and intraumbilical venous transfusion

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Objectives (목적)

We undertook this study to find out clinical characteristics and prognostic factors of neonatal survival in fetal anemia performed intraumbilical venous transfusion (IUT).

Methods (연구 방법)

From Jul 2000 to Mar 2009, 16 cases of fetal anemia diagnosed at Asan Medical Center (AMC, Seoul, Korea) and performed total of 35 intraumbilical venous transfusions were included in our study. This diagnostic work-up for associated conditions (or etiology) included detailed ultrasonography, karyotyping, fetal echocardiography, infection work-up (TORCH, parvovirus, etc), and autopsy (if fetus was dead). Doppler measurement of middle cerebral artery peak systolic velocity (MCA-PSV) was performed before cordocentesis in all fetuses. The examined prognostic factors were as follows: gestational age at procedure, presence of hydrops, number of performed procedure, presence of pleural effusion, hematologic parameters (hemoglobin, hematocrit and platelet count), mode of delivery, presence of identifiable associated conditions, 1-min and 5-min Apgar score (AS), and birth weight.

Results (결과)

Gestational age at diagnosis of anemia ranged from 21.3 to 33.6 weeks. There was a linear correlation between fetal hemoglobin (y) and the MCA-PSV (x): $y=0.571-0.052x$, $r^2=0.243$, CI 0.345-0.711. The perinatal mortality of fetal anemia treated intraumbilical venous transfusion was 62.5%. The morbidity of procedure is 62.5%. The associated conditions of fetal anemia was idiopathic, infection, alloimmunization and twin-to-twin transfusion syndrome in that order. Univariate analysis identified that neonatal survival was associated with unknown etiology of anemia (OR:20.0 CI 0.004-0.076, $p<0.05$). The neonatal overall survival of patients with severe anemia and known cause was significantly better than those of patients with mild to moderate anemia and unknown causes ($p<0.05$ and $p<0.005$).

Conclusions (결론)

In fetuses with hydrops, anemia can be detected noninvasively by Doppler ultrasonography on the basis of an increased MCA-PSV. Severity and etiology were meaningful factors for neonatal survival in fetal anemia treated by intraumbilical venous transfusion. This is valuable information when counseling parents with an affected fetus.