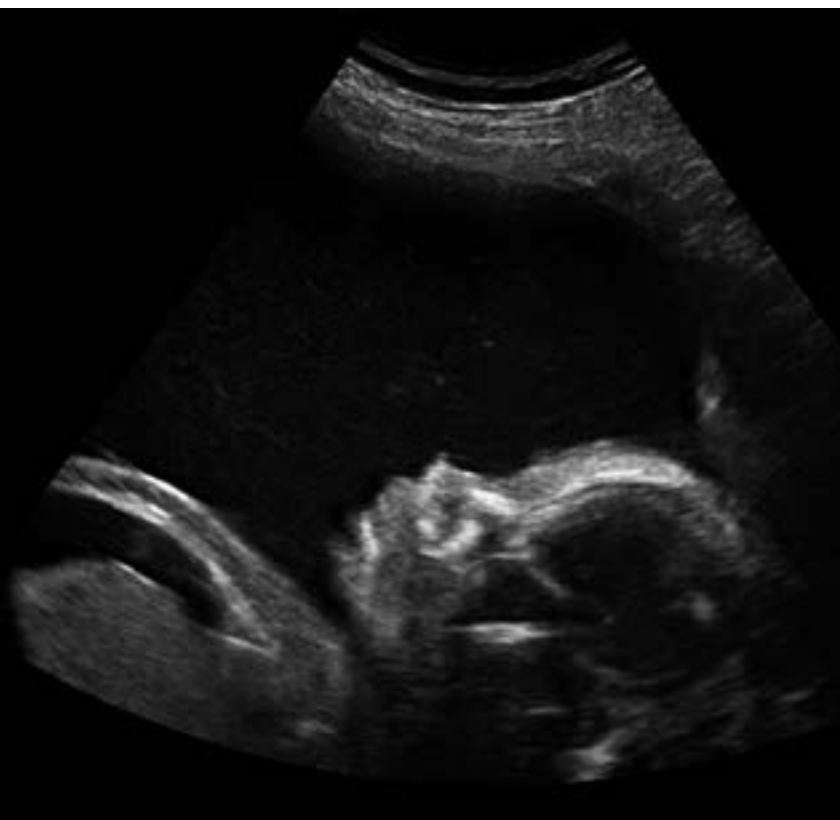


Early severe nonimmune  
hydrops fetalis: Do not  
give up, it is not always fatal!

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Hydrops fetalis (HF) is defined as the presence of excessive fluid accumulation in at least two fetal body cavities (1). It occurs in 1/1'500-4'000 pregnancies (2, 3). Two major groups can be differentiated: immune (IHF) and nonimmune hydrops fetalis (NIHF). IHF is almost always due to erythroblastosis caused by Rh alloimmunization. In the past, IHF was much more common than NIHF (incidence ratio of 9:1) (4). Nowadays, in the era of routine immunization of Rh negative mothers, about 80 percent of cases are NIHF (3).

Although diagnosis and management has improved in recent years, NIHF is still associated with a high fetal mortality rate, which varies depending on the etiology between 50 to 90 percent (3, 6). To the best of our knowledge, thus far no case of spontaneous regression of idiopathic NIHF has been published. Therefore, we report on a patient with spontaneous regression of early severe and prolonged NIHF.

At 19 2/7 weeks of gestation, a 34-year-old G3/P2 of Tamil origin was referred to our perinatal center for further assessment of bilateral hydrothoraces and ascites. Her previous pregnancies had been uneventful. In the past she had suffered from grand mal epilepsy, but remained seizure free after discontinuing carbamazepine therapy three years ago. Prior to this pregnancy, she had been treated with infliximab, methotrexate and prednisolone for rheumatoid arthritis. Medica-

tion was discontinued two months before conception without her rheumatologist's knowledge. Up to the 20th week, her pregnancy had been complicated only by occasional dizziness which later turned out to be absence and later grand mal seizures. Carbamazepine was restarted at 36 weeks of gestation.

Ultrasound results at 20 weeks of gestation confirmed extensive fetal hydrops (Fig. 1) with normal heart function and brain anatomy. There were no skeletal abnormalities. Dimensions of the placenta and fetal organs were normal. Except for the massively enlarged abdominal circumference, biometrical findings were along the 10th percentile. There were no signs of fetal anemia with normal peak velocity in the middle cerebral artery.

The mother's blood group was B Rh positive and the indirect Coombs' test was negative. Serologies for toxoplasmosis, parvovirus B19, herpes simplex virus 1 and 2, cytomegalovirus, VZV, rubella, HIV-1/2, coxsackie B1-6, and treponema were negative. Amniocentesis was declined by the patient and her husband. Both parents were convinced that their child would recover.

During the second trimester, fetal hydrops worsened. A head-lung-ratio of 0.27 suggested severe and most likely lethal lung hypoplasia. Therefore, it was decided that no caesarean section would be performed for fetal indications and spontaneous birth would not be monitored with fetal monitoring.

In the third trimester, signs of fetal hydrops improved. As a consequence, fetal lung maturation was induced at 28 weeks of gestation. Regular ultrasound exams documented further improvement of fetal hydrops (Fig. 2) and, at 40 weeks, only a left-sided pleural effusion remained. Fetal growth continued along the 10th percentile (Fig. 3, 4).

Postterm amniotomy was performed at 41 4/7 weeks of gestation. A female neonate was born by spontaneous vaginal delivery. Apgar scores were 5, 7, 9 at 1, 5, and 10 minutes, respectively. She received CPAP support for 10 minutes for mild respiratory distress. After bonding with the mother, the girl was transferred to our neonatal unit. The child had a birth weight of 2760 g (< P10) and a length of 47cm (< P10). The only remaining sign of the hydrops was loose skin over the abdomen with visible prominent intestinal loops (Fig. 5, 6). Echocardiography, cerebral and abdominal ultrasound examinations and chest X-ray were all normal. There was no evidence of pleural effusions. Albumin and total serum protein were within normal ranges. Her karyotype was normal. Histopathology of the placenta was normal.

After one week, mother and child were discharged home. At one year of age, the child was thriving and developing normally.



Fig. 1

*Fetal ultrasound at 20 weeks of gestation: ascites (A) and bilateral hydrothoraces (B).*

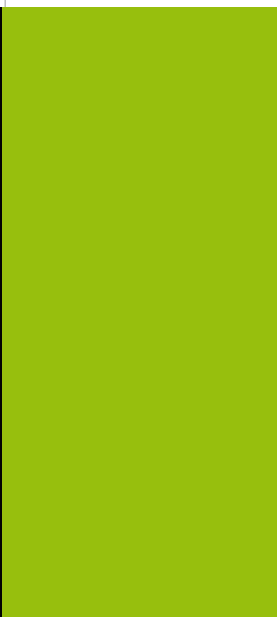
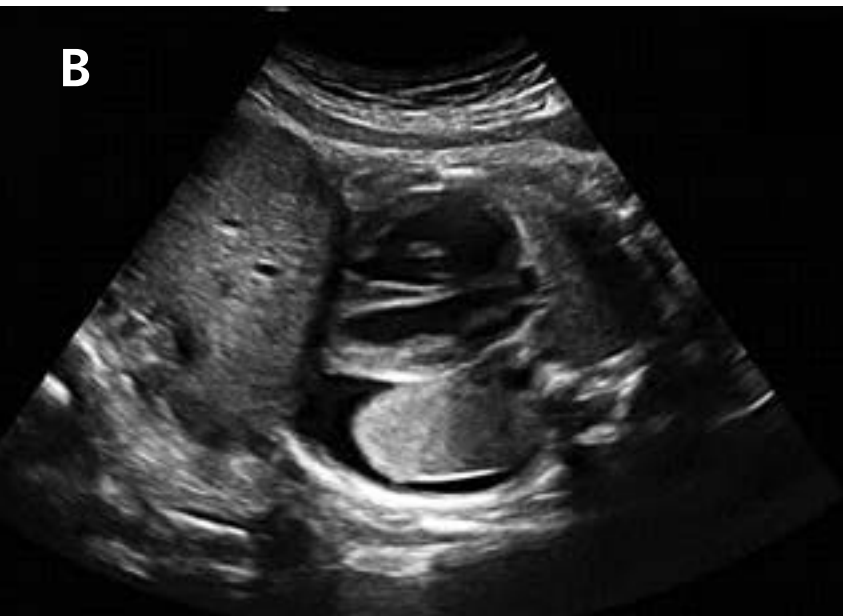




Fig. 2

*Fetal ultrasound at 33 weeks of gestation: improved hydrops with near complete resolution of ascites (A) and decreased pleural effusions (B).*



**B**

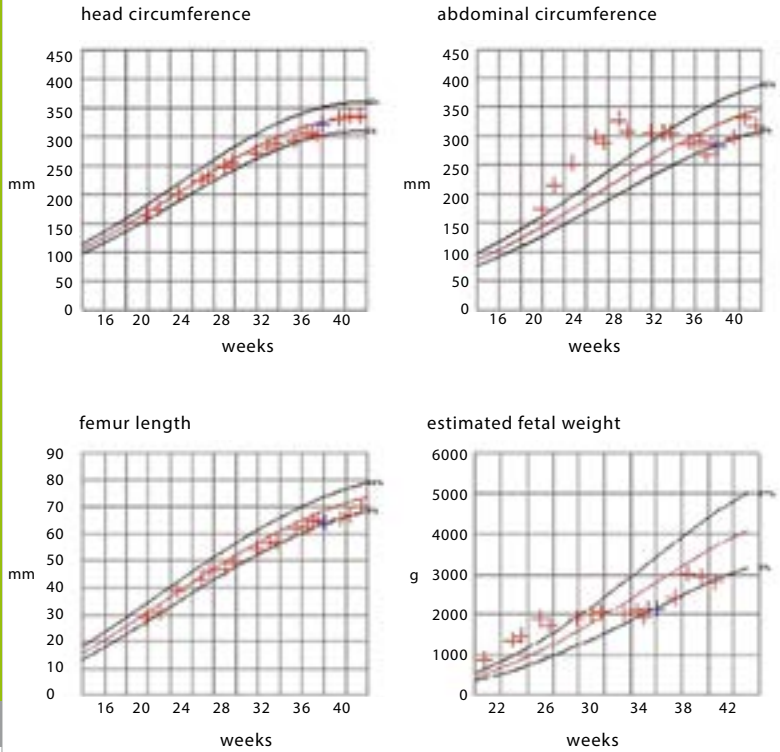
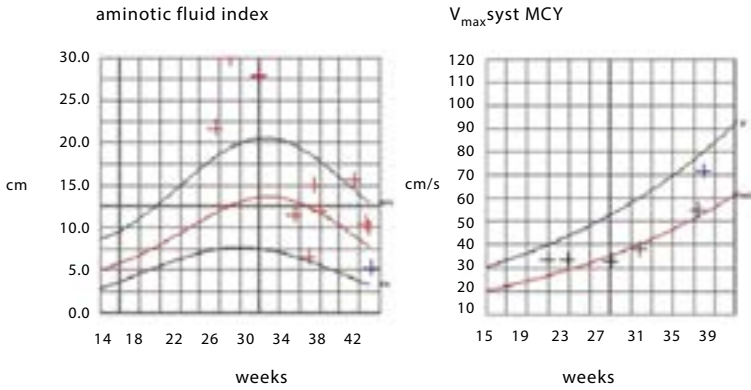


Fig. 3

*Biometric data: head circumference, abdominal circumference, femur length and estimated fetal weight.*



*Biometric data: Amniotic fluid index and  $v_{max}$  syst MCA.*

Fig. 4



Fig. 5

*First day of life: loose skin over abdomen with visible non-dilated loops of bowel.*



Fig. 6

*First day of life: redundant loose skin over abdomen.*

## DISCUSSION

NIHF has a variety of etiologies, consisting of fetal, placental, and maternal disorders (5). In 2008, Bellini and colleagues reviewed 6'361 cases of NIHF published in the literature and suggested the following diagnostic categories: cardiovascular (21.7%), idiopathic (17.8%), chromosomal (13.4%), hematologic (10.4%), infections (6.7%), thoracic malformations (6.0%), lymphatic dysplasia (5.7%), TTF-placental (5.6%), syndromic (4.4%), miscellaneous (3.7%), urinary tract malformations (2.3%), inborn errors of metabolism (1.1%), extrathoracic tumors (0.7%), and gastrointestinal (0.5%) (2, 3).

The direct underlying mechanisms responsible for hydrops are still unclear (7). Congestive heart failure, decreased plasma osmotic pressure, increased capillary permeability, and obstructed lymphatic flow, all lead to abnormal water transport between the capillary and interstitial space (3). High right atrial pressures or volume overload with congestive heart failure might, for example, cause the edema. Hepatic venous congestion may lead to impaired hepatic function which in turn leads to hypoalbuminemia (8). Anemia causes hydrops, especially if it develops slowly (9). Inborn errors of metabolisms can lead to anemia or liver failure (10). Infectious agents associated with hydrops mainly affect bone marrow, myocardium, and vascular endothelium. The latter may lead to increased vascular permeability (11). Thoracic or diaphragmatic malformations can lead to intrathoracic masses, which compress the heart

and limit its function (3). Twin-to-twin transfusion syndrome causes an imbalance in blood flow between donor and recipient (12). Finally, in maternal lupus erythematoses, antibodies crossing the placenta can lead to complete AV block (3).

Our case illustrates that in medicine prognostication can be very difficult.

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Swiss Society of Neonatology

[www.neonet.ch](http://www.neonet.ch)

[webmaster@neonet.ch](mailto:webmaster@neonet.ch)