

Vaginal infection therapy after premature rupture of the membranes

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It is generally well-known in the literature that morbidity and mortality due to infection rise with increased latency between premature rupture of the membranes and delivery. This emerges also from an evaluation of WESSMANN and ZÖCKLER from our unit studying all cases from 1968 up to June 1978 (Fig. 1).

Cases with early rupture of the membranes listed according to latency periods with the respective infection-related morbidity, mortality and lethality from 1968 - June 1978. After Wessmann, Zöckler, Saling.				
Latency	100 %	Morbidity	Mortality	Lethality
18- 48 hrs	171	14 (8.2%)	7 (4.1%)	50 %
- 3 days	108	14 (13.0%)	5 (4.6%)	36 %
- 4 days	58	8 (13.8%)	4 (6.9%)	50 %
- 5 days	31	6 (19.4%)	3 (9.7%)	50 %
- 6 days	19	4 (21.1%)	2 (10.5%)	50 %
> 6 days	72	20 (27.8%)	12 (16.7%)	60 %
Total	459	68 (14.4%)	33 (7.2%)	50 %

Fig. 1

Immediately after admission a thin catheter is fixed onto the portio with a knotted suture or it is inserted into the vagina by means of a ring pessary onto which it is knotted with a silk thread (Fig. 2).



Fig. 2

Results

We have evaluated the infant morbidity and mortality caused by infection as being the most important clinical success criteria

In accordance with the technique of infection prophylaxis during labor which we developed two years ago (1), we now use this new method modified accordingly also in cases of premature rupture of the membranes (2). All patients in our prenatal care unit are advised to come to the hospital directly after the membranes have ruptured. Immedi-

ately after admission a thin catheter is fixed onto the portio with a knotted suture or it is inserted into the vagina by means of a ring pessary onto which it is knotted with a silk thread (Fig. 2). Through this catheter a strongly diluted (0.5%) PVP-iodine solution is applied continuously into the vagina. The speed of the infusion is 20ml/h. The infusion should always be performed using an infusion pump to exclude interruptions in the flow. This continuous disinfection of the lower birth canal is performed until the start of labor.

Naturally it is possible to plug the catheter for a short time - having first applied a sufficient amount of PVP-iodine, to enable the patient to get up and have a wash or to go to the toilet.

(Fig. 3). In 81 premature infants (<37/0 weeks of gestation) that were born after a

Clinical procedure	Period	No. of cases	Morbidity (severe infections)		Mortality caused by				Total mortality	
			n	%	severe infections		other reasons		n	%
					n	%	n	%		
No vaginal infection prophylaxis	VI/74-XII/76	n=77	8	10.4	5	6.5	2	2.6	7	9.1
With vaginal PVP-iodine-Infusion	I/77-I/79	n=57	1	1.8	0	0	1	1.8	1	1.8
Latency: Rupture of the membranes-Infus.: <4 hrs		n=24	5	20.8	0	0	1	4.2	1	4.2
Latency: Rupture of the membranes-Infus.: >4 hrs		n=81	6	7.4	0	0	2	2.5	2	2.5
All cases with Betadine-Infusion										
Comparison of morbidity and mortality of premature infants (<37/0 pregnancy weeks, birthweight >1000 g) in the newborn period (1-28 day of life) after early rupture of the membranes (latency: rupture-birth >18 hours) According to Saling and Zöckler.										
	gestational age	birthweight	latency period (hours)							
without PVP-Jod-prophylaxis VI/74-XII/76	$\bar{x} = 33/3$	$\bar{x} = 2220 \text{ g}$	$\bar{x} = 104$							
PVP-Jod-prophylaxis-group I/77-I/79	$\bar{x} = 33/0$	$\bar{x} = 2070 \text{ g}$	$\bar{x} = 120$							

Fig. 3

latency time of more than 18 hours after early rupture of the membranes and vaginal PVP-iodine therapy, no infant died as a result of an infection in the whole neonatal period (1st to 28th day of life). The expected mortality during the period before the application of PVP-iodine lies in the region of 6.5% (that is 5-6 infants) in a comparable test group. The mortality due to other causes is

equally high in both groups, and also the middle latency time between rupture of the membranes and delivery.

The morbidity in infants caused by infection is only clearly lower in the group where the PVP-iodine application was started within 4 hours after the membranes had ruptured.

Considering maternal puerperal morbidity we found in 4 cases out of 76 mothers (5.3%) of the 81 premature infants there was fever for two days or longer. Among these were three caesareans; one of these mothers died after twin pregnancy as a result of clinically supposed puerperal sepsis after having a long and feverish lying-in period complicated by other illnesses (Diabetis, Parotitis and suspected Multiple Sklerosis). In consideration of the fact that the membranes were intact during the last days before the caesarean, that both infants showed no signs of intrauterine acquired infection and the histological examination of placentas, membranes and umbilical cords gave no indication of any amniotic infection, a serious ascending infection before the caesarean had been performed was supposed as improbable.

Side-effects of iodine-resorption

In our collective with subpartum infection prophylaxis we had observed that on the 5th day of life a considerable number of these newborn had increased TSH-screening levels (3). The reason for this is an iodine-resorption of the fetus mainly through the scalp. After early rupture of the membranes and PVP-iodine prophylaxis, the fetus is not directly exposed to the PVP-iodine solution. However vaginal iodine-resorption can occur through the mother, which can also lead to an iodine increase in the fetal blood. In several cases of early rupture of the membranes we found some considerable TSH-increase in the umbilical cord blood. However in all

cases this was only a temporary increase lasting for a few days, exactly like the TSH-increase after subpartum usage of PVP-iodine, so that the TSH-screening levels in all these newborn returned to normal on the 5th or at the latest 7th day of life.

Due to the possibility of iodine resorption occurring through the mother all pregnant women should be excluded from this therapy who have had thyroid illness in the past.

References

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