

OBJECTIVE DIAGNOSTIC INFORMATION AND LABOUR-DELIVERY MANAGEMENT HOMOGENEITY: OUR EXPERIENCE

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Summary: Since intrapartum cardiotocography was adopted as an objective diagnostic tool, we tried to evaluate if its routine use has induced more homogeneity in management between our staff members. The analysis of some simple parameters outlines how management variability between different staff members, still outweighs the supposed objectivity of the information coming from intrapartum cardiotocography.

Key words: Intrapartum cardiotocography - Labour and delivery management - Obstetrical audit.

INTRODUCTION

Information supplied by cardiotocography during labor is supposed to be an improvement over previous available methods because it allows objective evaluation of diagnostic data. The preminent purpose of any technological innovation is the amelioration of clinical service to patients. Concerning assistance to patients in labor, this amelioration is largely dependant from the availability of:

1. diagnostic methods with satisfactory objectivity, sensitivity and specificity in order to identify any relevant morbid condition.

2. therapeutic methods with proven efficacy.

If applied to a community of people working together, these two simple prerequisites must be implemented firstly by a consensus on interpretation of diagnostic data, secondly by uniform therapeutic behaviour and clinical approach.

As a matter of fact, even in modern times, the human factor has a great influence on quality of care; it is unfortunate that the glamour of new technologies too often distracts the attention of many people from the necessity of obtain-

ing a uniform behaviour within any group of operators.

At the end, we must never forget that the so called objectivity of any diagnostic information, in spite of high technology, is largely dominated by the human factor and that "*after proceeding by a computer a great number of subjective appreciations can easily masquerade as a series of objective quantitative measures*"⁽¹⁾.

Since many years our group employs cardiotocography for monitoring of fetal conditions during labor; in dubious cases, measurements of acid-base status on micro-samples of fetal blood are performed. Both methods offer to the physician in charge useful informations upon which decisions about obstetrical management are taken.

Aim of the present study has been to evaluate the effect on clinical outcome of the variability between staff members in using the available informations and in selecting a proper obstetric behaviour.

MATERIALS AND METHODS

Between 1980 and 1986, six staff members have been involved with the assistance of 2681 deliveries. The following cases were excluded

Table 1. — Pregnancy data (total cases: 2681) in percentage for single operators.

		OPERATORS					
		(A)			(B)		
		(1)	(2)	(3)	(4)	(5)	(6)
No. of deliveries		207	398	340	749	534	453
Mat. age	Median	27	27	28	27	26	27
	Mode	24	24	29	25	26	25
	Percent. 2.5-97.5	19-40	18-39	19-38	18-38	18-36	18-36
Gest. age	Median	40	40	40	40	40	40
	Mode	40	40	40	40	40	40
	Percent. 2.5-97.5	34-42	32-42	35-42	35-42	36-42	36-42
Parity 0	(%)	66	65	62	60	62	59
Parity 1-2	(%)	33	34	36	38	35	39
Preeclampsia	(%)	9	7	8	1	1	2
I.U.G.R.	(%)	4	3	5	3	1	2
P.R.O.M.	(%)	15	16	11	9	12	10
Meconium stained a.f.	(%)	20	16	14	14	15	17

from the present study: twin deliveries, breech deliveries, cases of elective cesarean section for non-obstetric indications. Three of the physicians were of the senior level, with full decisional privileges; the other three were junior members with limited decisional privileges.

Within the 2681 deliveries selected for re-evaluation the following parameters have been taken into consideration:

1. *Indicators of anamnestic and/or actual clinical risk*

- maternal age
- gestational age
- parity
- preeclampsia
- previous cesarean section
- severe intrauterine growth retardation (estimated fetal weight less than 2500 g at gestational age of 37 weeks or more)
- rupture of membranes for more than 10 hours before the beginning of labor
- meconium stained amniotic fluid.

2. *Indicators of obstetric behaviour*

- use of oxytocin in order to induce or to accelerate labor
- evaluation of fetal acid-base status on microsamples of scalp blood
- use of vacuum extractor
- use of the forceps
- cesarean section (only for senior staff members).

3. *Indicators of fetal outcome*

- Apgar score at one and five minutes, as assigned by the paediatrician.

RESULTS

The number of deliveries assisted by anyone of the staff members has been adequate for statistical analysis among the group of senior members (group A) and the group of junior members (group B). The two groups had to be considered separately because of the differences of the cases managed by the senior and junior staff members (table 1).

The data concerning the comparison between operators are summarized in table 1. As far as the indicators of anamnestic and clinical risk are concerned no statistical differences between operators of Group A and operators of Group B could be shown.

In table 2 the indicators of obstetric behaviour are summarized ("management data"). Use of oxytocin and of micro-sampling of fetal blood is homogeneous among Group A operators, while there are

Table 2. — Management data (total cases: 2681) in percentage for single operators.

		OPERATORS					
		(A)			(B)		
		(1)	(2)	(3)	(4)	(5)	(6)
Oxytocin in labor	(%)	20.28	17.33	14.41	17.08	11.04 (*)	18.98
F.B.S.	(%)	9.66	6.78	5.29	2.8	3.55 (***)	5.96
Vacuum extractor	(%)	3.86	9.29 (***)	5.89	4.81	5.24	4.20
Forceps	(%)	4.36	7.78	5.60	0.66	0.18 (**)	1.76
Vaginal delivery after C. section	(%)	10	5	24			
C. section "first"	(%)	54	32	25			

(*) p: 0.01 (**) p: 0.02 (***) p: 0.05 (****) p: 0.001

statistically significant differences between Group B operators.

Statistically significant differences for the use of the vacuum extractor are present only between Group A operators, while for the use of the forceps they are present only between Group B operators.

Performance of cesarean section has been evaluated only among Group A operators, because those of Group B hand no decisional privileges in this respect. There was no statistically significant difference

for repeated cesarean sections ($p = 0,2$); on the contrary there was a highly significant difference in the frequency distribution of "first" cesarean sections.

In table 3 the figures for the Apgar scores at one and five minutes are shown. Among Group A operators there is a significant difference between the prevalence of scores 0-3 and the prevalence of scores 4-9 at one minute; secondly, between the prevalence of scores 0-6 and the prevalence of scores 7-9 at five mi-

Table 3. — One and five minutes Apgar score (when available) related to single operators, as given by the neonatologist.

	OPERATORS					
	(A)			(B)		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>One min. Apgar score</i>						
0-3/4-9 (cases no.)	26/178	24/357 (***)	26/308	16/707	3/507 (***)	4/452
0-6/7-9 cases (no.)	58/146	85/296	67/267	72/651	28/482 (**)	30/399
<i>Five min. Apgar score</i>						
0-3/4-9 cases (no.)	3/203	3/390	1/338	—	—	—
0-6/7-9 (cases no.)	11/195	6/387 (*)	6/333	5/738	—	1/449

(*) p: 0.01 (**) p: 0.02 (***) p: 0.05

minutes. Among Group B operators there is a statistically significant differences scores 4-9 at one minute and also between the prevalence of scores 0-6 and the prevalence of scores 7-9 at one minute (scores 10=9).

DISCUSSION AND CONCLUSIONS

All the staff members had uniform access to cardiotocographic evaluation of fetal well-being during labor and full availability of fetal scalp blood sampling in order to take informed decision in the management of the cases under their care. A retrospective analysis of the obstetrical records has shown that all staff members, in the course of the time interval selected in the present study, had under their care a comparable group of cases with comparable clinical conditions. In spite of this, we observed a substantial divergence between the obstetric behaviour of the single operators. It was not possible however, to pinpoint whether this depends from different interpretations of available diagnostic informations or from a different cultural background. Surprisingly enough the neonatal outcome does not seem to

be much influenced by the different obstetric behaviours documented among our staff physicians. The only difference is an increased frequency of low Apgar scores at one minute in association with an increased frequency of cesarean sections (operator 1). As we did not intend to circutinize the appropriateness of the indications to perform cesarean sections, at the present time we cannot offer a satisfactory explanation for this occurrence.

In spite of the fact that the neonatal outcome was not influenced by the divergencies of obstetrical management described, on the contrary maternal outcome was obviously influenced at least in terms of surgical aggression. For this reason we stress the necessity to improve the "human factor", that is a consensus of opinions and coherent behaviour, among members of the same professional group; otherwise, any improvement in diagnostic technology will scarcely be of benefit to both mothers and babies.

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