

Short-term neonatal outcome in routine use of painless delivery: a retrospective study

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ABSTRACT

The painless delivery, recently included among the essential levels of care, is an application of epidural analgesia to the last stage of labor which may greatly improve the quality of childbirth experience. This technique is poorly used in Italy, because of the lack of information in the population, disruption of services and scarcity of economic resources. There are not many retrospective studies quantifying the use of this technique in recent years, nor clinical indicators highlighting any adverse event from the neonatal point of view. We describe the ten-year experience of a birth point belonging to a peripheral hospital, comparing two populations of neonates born in the same center in two different periods, in order to determine whether the routine use of analgesia in labor can influence the short-term neonatal outcome. We examined the basic data regarding all neonates born in the years 2004 and 2014. In 2004 the painless delivery was not yet used in our center, while in 2014 it was used routinely in every spontaneous birth. We examined data obtained retrospectively from the paper files of the delivery room and neonatal ones. The two populations of infants examined were comparable for baseline characteristics, such as full-term pregnancy, absence of obstetric risk factors and similar operative protocols for emergency caesarean section indications. For every baby the type of delivery, the Apgar score, the transfer rate in the neonatal intensive care unit and eventual death were marked. The analyzed data confirm that there are no statistically significant differences in short-term neonatal outcome between the two groups of infants

INTRODUCTION

Epidural analgesia is a painless therapy used in Italy since more than sixty years, with good and proved efficacy, and its application to obstetrics allows labor in analgesia. The most effective technique for analgesia during labor and delivery is achieved by loco regional anesthesia and more specifically with central blocks performed at the lumbosacral level. Opioids, local anesthetics or mixtures of the two that block pain transmission are done depending on the time of labor. The anesthetist administers the analgesic. A thin catheter is inserted into a space between two

vertebrae in the lower back and is fixed with a plaster. Through the catheter a mixture of drugs that block the painful stimulus in the lower part of the body is administered, without numbing it and without interfering with muscle strength. Whenever the effect wears off, the woman requests the analgesic. The catheter is removed about two hours after giving birth. In case of an unplanned cesarean, when labor has already started, the same procedure is dose of local anesthetic and induce epidural anesthesia. Like all invasive techniques, such procedures may have contraindications and could lead to

complications. In the last years, in some Italian hospitals has been introduced the technique of analgesia during labor and vaginal delivery, first as an experiment, then as routine. We do not have reliable data on its actual use, because often in the information flows is not recorded the use of analgesic techniques in the course of labor. This technique, widely used in Europe, however, is little used in Italy: according to official documents, only 10% of the Italians benefit from this practice, compared to 70% in France and Britain. In fact, there is currently no data on the real percentage of the use of analgesia during labor in Italian departments of obstetrics. Recently, the Ministry of Health has entered the labor analgesia between the basic levels of care. The low demand from the population of analgesia in Italy, is not due to religious, cultural or scientific reasons, because the usefulness and safety of the practice has been clearly demonstrated. Although, the lack of service organization and the numerical shortage of anesthetists who can perform this technique covering a H24 service seems to be a problem. In addition, much of the population fears the possible adverse events for newborns. Epidural analgesia is said to have depressive effects on neonates. There seems to be sufficient studies in the literature that have compared maternal outcomes in relation to epidural analgesia, but there is lack of instances on neonatal outcomes occurring with respect to epidural labor analgesia. A retrospective case-control study was published by Sylvanus Kampo in 2016, that evaluated the relationship between epidural analgesia, labor length, and perinatal outcomes. A total of 350 pregnant women at term who delivered under epidural analgesia (cases) were compared with 1400 patients that did not receive epidural analgesia (controls). The conclusion was that complications in the epidural group were not statistically different from those in the control group and that epidural labor analgesia is safe for the fetus used to give the woman a larger and neonate. We report the experience of a peripheral hospital with maternity ward, starting in 2005 and now established, taking into account as a single result parameter, the short-term neonatal outcome. In our department, anesthesia service guarantees a free painless childbirth to all pregnant women who request, and it is organized by a medical and nursing team of anesthesiologists, obstetricians-gynecologists and pediatricians-neonatologists, all in active-call. Pregnant women interested in painless delivery, are appropriately educated in the months before birth through a preparation course

inserted in the birth path, followed by anesthesia counseling.

2.0 Materials and methods

We performed a longitudinal study examining retrospectively, with information gathered by paper records of the maternity ward and delivery room, the data relative to all the spontaneous and caesarean parties carried out at our Obstetrics and Neonatology Department, during the year 2004 and the year 2014. Year 2004 was the last no labor analgesia; the year 2014, represents year at full activity for painless delivery. For every birth we recorded: the type of delivery, gestational age, weight and sex of the newborn, the Apgar score, mortality, and any transfer towards NICU (Neonatal Intensive Care Unit). We only considered full-term singleton pregnant. The case histories of 2004 included a total of 980 births (480 M and 500 F), 58% of spontaneous deliveries and 42% of caesarean sections, EG average of 39.1 weeks. Total number of newborns transferred to NICU after spontaneous delivery in the year examined was 6 or 1.1% of those born by vaginal delivery. No neonatal deaths occurred in this group, so mortality was zero. The 2014 series included 840 infants (436 M and 404 F), 62% of spontaneous deliveries and 38% of caesarean sections, with EG average of 39.9 weeks. The number of parts with analgesia executed was 495, or 95% of the total spontaneous deliveries. Just 1.3% (n=7) of the total of the newborns from spontaneous delivery required higher level care in a neonatal intensive care unit (NICU). In this group as well, the mortality was equal to 0. The data obtained were analyzed using the SPSS for Windows software, version 19.0 – Chicago, SPss Inc. The comparison between the two groups for categorical data was performed using the Chi-square test, considering statistically significant value a $p < 0.05$.

3.0 Results

From the comparison between the two groups of infants, it is evident that there is no statistically significant difference between the rate of cesarean in the first and in the second group ($p = 0.089$), as well as there is no significant difference between the two groups regarding the percentage of neonatal transfers after spontaneous birth (1.1% among those born in 2004 and 1.3% among those born in 2014), with $p = 0.82$. Mortality rate is exactly the same in the two groups. From the data gathered and examined we extrapolated that the short-term outcome of infants from birth with analgesia proved

absolutely similar to that of newborns by vaginal delivery without analgesia.

4.0 Discussion

The considered data regard two full-term neonate populations, with no initial risk factors. In fact, both populations were selected at the beginning, as belonging to a birth center in the base hospital and not to a neonatal intensive care unit. All newborns examined were comparable for baseline characteristics, such as full-term pregnancy, absence of obstetric risk factors and same operative protocols for emergency caesarean section indication. The percentage of use of the technique in the spontaneous delivery group is high, and surely our birth point is chosen by the vast majority of its users because of free analgesia service. We chose to use the transfer parameters and the percentage of caesarean sections as markers of results, because other data such as the Apgar score can be determined and conditioned by midwives dynamics that are independent of the presence or absence of analgesia. In addition, decision-making criteria for caesarean election, were not different between the two groups of infants examined, as they have remained the same after ten years. And so, the two cohorts of newborns examined can be said to be homogeneous. Therefore, from the data examined there does not seem to be any difference in the outcome of the two neonatal populations.

5.0 Conclusion

Actually our division has become a local reference for use of labor analgesia. Its routine application during labor does not seem to be linked to an unfavourable short-term neonatal outcome, as it is shown by our data collected and examined. However the peripheral centers that have organized, maintained an expanded in long time their experience in childbirth analgesia are still few and poorly documented.

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