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RESEARCH ARTICLE

DICLOFENAC FOR POST CAESAREAN SECTION (CS) ANALGESIA USED AT OMDURMAN MATERNITY HOSPITAL (OMH), SUDAN 2017

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ABSTRACT

Background: Postoperative pain relief after caesarean section (CS) requires the balance between pain relief and side effects of the drug used or the procedure.

Objective: To assess the role of post-operative analgesia using rectal diclofenac; and intra-muscular (I/M) pethidine; and their side effects in women delivered by cesarean section at Omdurman Maternity Hospital (OMH) 2017.

Methods: This is a prospective cross-sectional hospital-based study conducted during the first six months of 2017. Women delivered by uneventful CS under spinal anaesthesia (SA) were included in the study after an informed consent. Unless contra-indicated; all women received a non-steroidal anti-inflammatory drug (NSAID); diclofenac sodium 75 mg, given rectally immediately after operation and repeated every eight hours during the first 24 hours or when needed. Women with contraindication for NSAID or when pain was persistent in spite of repeated NSAID; were given an opioid; pethidine or tramadol 100 mg intramuscularly (IM). Women were assessed for blood pressure, pulse, respiratory rate and symptoms of pain, headache, post partum haemorrhage (PPH), nausea and vomiting. Data was collected by trained data collectors using a structured format.

Results: A total of 15209 delivered in this hospital during six months, 9974 (65.6%) delivered vaginally and 5235 (34.4%) by CS. Elective CS were 2947 (56.3%) and emergency CS were 2288 (43.7%). Out of those delivered by CS, 4800 (91.7%) received diclofenac (vortex) and 435 (8.3%) received pethidine. There was no significant difference between the two groups in their socio-demographic characteristics or their pulse rate, blood pressure and respiratory rate (PV = 0.150). Nausea and vomiting were mild in both groups, whereas in diclofenac are less than pethidine (PV= 0.05), other side effects were not reported in either of the two groups. Patient' satisfaction and hospital stay were almost the same in both groups.

Conclusion: Postoperative Use of diclofenac has provided good analgesic effect, greater patient satisfaction, reduced consumption of opioids, less side effects and shorter hospital stay for women underwent cesarean section.

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INTRODUCTION

Pain is an unpleasant emotional or sensory feeling associated with tissue damage.

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CS usually causes moderate to severe pain within the first 24-48 hours (Bonnet, 2010). With the increased rates of CS, women would like to remain pain free during and after operation. Effective analgesia is an important part of post operative management of patients following CS. Pain relief after CS will optimize newborn care, mother-child bonding, early breast feeding, early mobilization, preventing

thromboembolism, improving wound healing, decrease intraabdominal adhesion, post-operative rehabilitation, patients' satisfaction and early hospital discharge (Nambiath Sujata, 2014). For pain relief following CS; many drugs have been used; including, opiates and non-steroidal anti-inflammatory drugs (NSAIDs) (Elyasi, 2010). The conventional methods of analgesia have been centered on the use of opioids, producing good pain relief but have some unwanted side effects. Other effective interventional procedures like neuraxial methods and regional field blocks have been used, however, they need special experienced persons (Marcel, 2009). A good pain relief after CS should be cost effective, safe for both mother and baby, needs minimal monitoring and less interventional procedures (Nambiath Sujata, 2014). The drug should not be secreted in milk and the mother should not be sedated or affected by procedures affecting baby care. Minor side effects like nausea, vomiting, shivering, pruritis, constipation, urinary retention and sedation may affect newborn care with less maternal satisfaction. Drug availability, maternal health and availability of medical experts affect the choice of analgesic (Nambiath Sujata, 2014). Morphine, pethidine, tramadol and fentanyl are commonly used opioids for pain relief, but, they may cause some side effects including; sedation, respiratory depression, hypotension, nausea, vomiting, pruritis and addiction. The commonly available inexpensive opiates are pethidine and morphine, however, morphine is more potent, with longer duration of action and more respiratory depression than pethidine (Sukhyanti Kerai, 2017). Pethidine is the opioid of choice used at OMH at a dose of 100 mg intramuscular (IM) after operation or if needed during operation for selected cases. Side effects of opioids have led to the utilization of non-opioids analgesia, where NSAIDs use showed satisfactory pain relief, good clients' satisfaction, shorter hospital stay, reduced rates of opioids and antiemetics for patients undergoing CS (Altman, 2015). They are used increasingly for treatment of post operative pain, as single or in combination in many countries (Gandini, 1983). They cause mild side effects including; prolongation of bleeding time, platelets dysfunction, decrease uterine contraction leading to post partum haemorrhage (PPH), and renal damage, which are not significant, particularly for diclofenac or ketoprofen in recommended doses. They are contra-indicated in post partum haemorrhage, bronchial asthma, peptic ulcer and renal insufficiency (Anderson, 2001).

MATERIALS AND METHODS

This is a prospective cross-sectional hospital-based study conducted during the period from January to June 2017. Women delivered by uneventful emergency or elective CS, under spinal anaesthesia (SA) were included in the study after an informed consent. Ethical approval was obtained from ethical review committee (ERC) at OMH. According to the protocol adopted by OMH; all women received NSAID; usually diclofenac 75 mg, unless contra-indicated, given rectally immediately following C/S and repeated every eight hours during the first 24 hours or when needed. Second or third generation cephalosporin were given at the start of CS. Women complained of pain in spite of repeated NSAID were shifted to pethidine or tramadol 100 mg intramuscularly (I/M). All women were operated on by a registrar or a consultant. They were advised to start early breast feeding, oral intake and early mobilization. They were closely followed during first 24 hours, till time of discharge and the vital signs for pulse, blood pressure and respiratory rate were reported at 1, 2, 3, 6, 12 and 24 hours post operatively. They were interviewed on the 2nd day using standardized symptom checklist assessing whether they had any of the expected symptoms, including; pain, headache, itching, constipation, nausea, vomiting, PPH and difficulty in breast feeding. Due to high bed occupancy in this hospital; uncomplicated cases usually discharged after 48-72 hours and advised for follow up one week later. Patients' satisfaction was assessed by willingness to receive the same regimen of pain relief if she delivered next time by CS. Data was collected by trained data collectors using a structured format, reviewed by investigators for completeness, editing and analysis was done by trained person using SPSS program version 20.

RESULTS

Total number of deliveries in this hospital during six months were 15209, 9974 (65.6%) delivered vaginally and 5235 (34.4%) by CS, 5170 (98.8%) delivered under SA and 65 (1.2%) under general anaesthesia (GA). Elective CS were 2947 (56.3%) and emergency CS were 2288 (43.7%). Out of those delivered by CS, 4800 (91.7%) received diclofenac (vortex), while only 435 (8.3%) received pethidine, 4895 (93.5%) were discharged within 48-72 hours, the rest 340 (6.5%) stayed for

Table 1. Effect of pethidine and NSAID (diclofenac sodium) on pulse rate; used at OMH for post operative pain relief

Drug used	Diclofenac N= 4800	Pethidine N= 435	PV
Time of assessment	Mean pulse rate / minute	Mean pulse rate / minute	
End of operation (00.0)	78.25	79.07	
1 hour after operation	78.65	81.97	
3 hours after operation	80.78	81.64	
6 hours after operation	81.08	83.34	
12 hours after operation	79.51	81.56	
24 hours after operation	77.52	80.95	
Total mean pulse rate	79.30	81.41	0.150

Rectal diclofenac is a potent NSAID, a prostaglandins synthetase inhibitor, with rapid onset of absorption, but is less than the oral or parenteral route with reduced side effects than both routes (Hardman, 2001 and Haleh Rahmanpoor, 2007). To our knowledge, there is no documented or published data on this subject, which necessitates the need for this study to assess the use of NSAID (diclofenac sodium) for pain relief after CS at OMH 2017.

more than three days for different reasons, including new born problems. There was no significant difference between the two groups in their socio-demographic characteristics, or their pulse rate, blood pressure and respiratory rate (tables 1- 3). Nausea and vomiting were mild in both groups, whereas in diclofenac was 37 cases (00.8%) and 178 (3.9%) respectively and in pethidine were 180 (4.1%) and 70 (16.1%) respectively; (PV =0.05). Other side effects were not reported in either of the two groups.

Table 2. Effect of pethidine and NSAID (diclofenac sodium) on respiratory rate; used at OMH for post operative pain relief

Drug used	Diclofenac N= 4800	Pethidine N= 435	PV
Time of assessment	Mean respiratory rate / minute	Mean respiratory rate / minute	
End of operation (00.0)	15.93	15.51	
1 hour after operation	15.42	15.68	
3 hours after operation	15.80	15.21	
6 hours after operation	15.80	15.00	
12 hours after operation	15.53	15.44	
24 hours after operation	15.83	15.53	
Total mean resp. rate	15.72	15.40	0.150

Table 3. Effect of pethidine and NSAID (diclofenac sodium) on blood pressure; used at OMH for post operative pain relief:

Drug used	Diclofenac N= 4800	Pethidine N= 435	PV
Time of assessment	MSBP/ MDBP *	MSBP/MDBP	
End of operation (00.0)	114.10/ 75.53	110.69/ 73.51	
1 hour after operation	111.27/ 74.63	110.69/ 72.31	
3 hours after operation	114.65/ 73.70	113.12/ 73.09	
6 hours after operation	113.40/ 73.97	112.43/ 72.03	
12 hours after operation	115.43/ 75.27	111.34/ 72.63	
24 hours after operation	115.23/ 74.33	111.92/ 73.22	
Total MSABP/ MDBP	114.01/ 74.56	111.70 /72.80	0.150

- MSBP = Mean systolic blood pressure
- MDBP = Mean diastolic blood pressure

Patient' satisfaction was 4315 (89.9%) for diclofenac and 371 (85.4%) for pethidine with no significant difference; (PV = 0.150). Hospital stay was almost the same in both groups.

DISCUSSION

Post operative pain management following CS is a common problem. It is important to limit the use of opioids due to their documented side effects, such as sedation, nausea and vomiting which may have a negative impact on the mother and the baby care (Haleh Rahmanpoor, 2007). Pethidine is the most widely used drug during labour and delivery, but it has fallen in many countries and replaced by non-opioid drugs, like diclofenac (Athicom, 2015). The complex rules and regulations concerning opioids prescription actually have imposed some limitations on the consumption of these pain-relieving drugs (Mitra, 2012). Many studies used NSAIDs added to opioids medication to improve pain relief and reduce opioids consumption (Abdollahi, 2011). A study performed in January 2008 on reducing pain after cesarean section with paracetamol, diclofenac, or their combination found that morphine has been used 38% less in the combination of diclofenac and paracetamol than paracetamol group. Nevertheless, there was no significant difference in diclofenac group than paracetamol–diclofenac group (Munishankar, 2008).

Another study conducted in Lebanon in July 2001, investigating the effects of diclofenac or propacetamol in reducing pain after caesarean section in patients receiving morphine, indicated that diclofenac improved analgesia after caesarean section according to Visual Analog Scale (VAS) and reduced morphine consumption rate significantly (Siddik, 2011). In this study, diclofenac was used alone for pain relief following CS, compared to pethidine in selected cases. There was no difference in pain relief and side effects reported by the two groups; even diclofenac has less nausea and vomiting than pethidine. This is consistent with the study done by Haleh *et al* comparing pain relief by diclofenac and pethidine, where they found that pain score was significantly lower in diclofenac group than pethidine (Haleh Rahmanpoor, 2007). In the same study they found that the incidence of vomiting and ileus did

not differ in the two groups and there was no reported PPH (Haleh Rahmanpoor, 2011). Inadequate analgesia may decrease patient' satisfaction and may cause unwanted physiological and psychological effects (Samimi Sede, 2014). Usually patient' satisfaction is influenced by the adequate information provided to patients about the drug or the procedure, especially when unfamiliar route of drug is used. In this study patients' satisfaction was 89.9% with diclofenac and 85.4% with pethidine, which is similar to that found by Soroori *et al.* (Soroori, 2006). In this study; 93.5% of patients were discharged within 48-72 hours with good satisfaction. This is consistent with that found by Marinsek *et al* where they found that, rectal diclofenac was associated with earlier hospital discharge and more patient' satisfaction than with intramuscular route with post operative analgesia (Marinsek, 2007).

Conclusion

Post operative use of diclofenac has provided good analgesic effect, greater patient' satisfaction, reduced consumption of opioids, less side effects and shorter hospital stay for women underwent cesarean section.

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