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ORIGINAL ARTICLE

Assessment of surgeon performed caudal block for anorectal surgery

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Summary *Background:* The surgical anorectal diseases are common and distressful pathologies and their management mostly needs surgical intervention. Caudal anesthesia is effective in doing surgical procedures whenever the surgical area is mainly innervated by the sacral and lower lumbar nerve roots. It is used to give the local anesthesia by surgeons, in the present study the surgeon is the person who also gives the caudal anesthesia.
Methods: 202 patients (118 males vs. 84 females) were enrolled in this study with different surgical anorectal diseases. All of them were planned to be treated surgically under the effect of caudal anesthesia that was given by injection 10 ml of 2% lidocaine through sacral hiatus. All caudal anesthesia attempts were performed by the author surgeon.
Results: The total success rate of caudal anesthesia performed by the surgeon was 72.2% (divided into ≅67.7% in the first year of the study, ≅72 in the second and ≅76.4% in the third year). The failed attempts were in 18.81% males vs. 8.91 females. The morbidity rate was 0.99% and the mortality rate was zero.
Conclusions: The surgeon can perform the caudal anesthesia effectively and safely. This success improved with gaining more experience. This can help partly in solving the shortage in no. of anesthetists in some developing countries.

1. Introduction

So many patients are complaining from anorectal pathologies, and they are usual visitors of the outpatient clinics and casualties units. The anorectal diseases are common in both sexes and in all age groups and the prevalence of anorectal disorders in the general population is probably much higher than that seen in clinical practice as most patients do not seek medical attention.[1] The spectrum of anorectal disorders ranges from benign and irritating (pruritus ani) to potentially life-threatening (anorectal cancer).[2] Surgical intervention is the main line of treatment for most of the anorectal diseases. The surgical treatment is usually performed under general or regional anesthesia. "Caudal epidural blocks are the most widely used regional anesthetic

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technique for any procedure on the lower part of the abdomen and lower limbs, especially in neonates, infants, and certain high-risk children".[3] Although caudal anesthesia has side effects and complications, it is a good choice for many patients, especially those with major comorbidities such as significant cardiopulmonary diseases.[4] The anesthesia-related services constitute one of the important health-related systems, which often found to be severely deficient in the underdeveloped world. Therefore, these deficiencies create an unsafe perioperative environment and contribute to increase in morbidity and mortality in these countries.[5,6] In our country (Iraq), the anesthetist is the health care person responsible for giving general and regional anesthesia. Due to the shortage in the anesthetists in our hospital, which is the situation in most hospitals in our country, I tried to solve part of this problem by the surgeon taking the responsibility of giving caudal anesthesia in the surgical treatment of anorectal diseases and then this trial may be applied to other pathologies within field of caudal anesthesia.

2. Patients and methods

This prospective study was conducted in Al—Sader teaching general hospital in Maysan province over three years for a period extended from 1st of September 2015 to end of August 2017. A total of 202 patients were included (118 male and 84 female), their ages range between 15, and 82 years with a mean age of 39 years (Table 1).

The diagnosis was elicited by full history and physical examinations with the necessary relevant investigations (Table 2).

All of the patients after preoperative preparation with informed consent were operated on in operation theatre, where was an anesthetist available and working in other rooms of the theatre and he was standby for any unsuccessful attempts or any complications.

The exclusion criteria were coagulation disorders, local infection at sacral area, severe spinal deformity, patient refusal and uncooperative patients to regional anesthesia.

All patients received caudal anesthesia that was performed by the surgeon (the author of this article) according to the standard technique through injection 10 ml of 2% lidocaine in sacral hiatus (in prone or left lateral positions) and waiting for 15—20 min before starting the surgical operation.

About 62 patients had been operated on in the first year of the study and 68 in the second year and 72 in the third one. The unsuccessful attempts of caudal anesthesia were either followed by spinal or general anesthesia.

3. Results

The successful attempts in giving caudal anesthesia were 42 out of 62 patients (≅67.7%) in the first year of the study, in the second year 49 out of 68 patients (≅72) and in the third year 55 out of 72 patients (≅76.4%). The overall success rate is 72.2% (Table 3).

The failed attempts were in 56 out of 202 patients (27.72%) that distributed in 38 males (18.81%) and in 18 female (8.91%) (Table 4).

The complications related to caudal anesthesia were small local hematoma in one of the cases and mild hypotension in another case (neurogenic shock). There was no mortality (Table 5).

Table 1 Distribution of patients by age groups.

Age group	Male	Female	Total
15—20	14	8	22
20—40	55	44	99
40—60	34	23	57
>60	15	9	24
Total	118	84	202

Table 2 Distribution of patients by pathology.

Diagnosis	Males	Females	Total
Perianal abscess	28	16	44
Anal fissure	32	25	57
Hemorrhoid	31	21	52
Fistula in Ano	26	20	46
Others	1	2	3
Total	118	84	202

Table 3 Distribution of cases/year and successful caudal block.

	No. of patient	No. of successful cases	≅ %
1st year	62	42	67.7
2nd year	68	49	72
3rd year	72	55	76.4
Total	202	146	72.2

Table 4 The distribution of failure rate.

	No.	%
Males	38	18.81
Females	18	8.91
Total	56	27.72

Table 5 Morbidity and mortality.

	Morbidity	Mortality
No. of cases	2	0
%	0.99	0

4. Discussion

Anorectal diseases are one of the most distressful surgical problems. Some of these diseases can be treated conservatively (like acute anal fissure and grade 1 hemorrhoids) but most of them need surgical intervention and many surgeons and patients prefer performing surgical operations under regional anesthesia. Most anesthesiologists would prefer regional anesthesia due to the rapid recovery advantages in comparison with general anesthesia.[7] Since 2000 caudal block is successfully used for adult anorectal surgery.[8] In performing the sacral block, the patient can be positioned in either left lateral, prone or knee-elbow positions.[9] In our study, most of the patients were kept in the prone position (about 87%) while the remaining were positioned in the left lateral position (13%). The most important ways that adopted in the localization of sacral hiatus, were local palpation for the hiatus with their cornue and the localization of local anatomical landmarks (posterior superior iliac spine), which were easily identified and very helpful in slim patients. In cases of difficult localization, I adopted another method represented by measuring 10 cm above the tip of the coccyx in the midline. With 2—3 trials of insertion the needle at different spaces (less than 10 mm above or below the supposed site). Then aspiration of the needle to exclude any CSF or blood, followed by injection of local anesthetic after the feeling puncture of posterior sacrococcygeal ligament and the unresisted injection.

In our study, the overall success rate of the caudal block was 72.2% and this rate is within the range of recorded success rate (70—80%) in other studies,[10—12] but it is unlike high success rate by Shu- Yam Wong, et al which was (95.9%). In our study, the success rate in the 1st year of study was (67.7%), this is relatively lower than the above mentioned recorded range, and then the rate started increasing in the following years and this reflects the effect of gaining experience of caudal block technique. The caudal block was the first and the only epidural anesthesia that was used in surgical practice (in 1900) until the advent of lumbar epidural anesthesia (20 years later). Since then there is growing preference to lumbar epidural anesthesia over the caudal one. The main reason for this decline in using caudal anesthesia is the considerable failure rate, which is attributed mainly to the difficulties in the localization of sacral hiatus and the great anatomical variations.[9] The failure rate in the present study was 27.72% and it was about three times more common in males than females. This may reflect anatomical variation between the sexes, as it probably explained on the bases of the wide pelvis in the females may be associated with wider sacral hiatus, taking into consideration that about 7.7% of the population does not possess a sacral hiatus.[13] Therefore, to improve success rate it is important to understand the details of sacral region anatomy and its variations. Nagar S.K. point to this issue in his study about the sacral hiatus.[14] Moreover, I recommend about sticking to the standard technique in performing the caudal block and training under the supervision of experienced anesthetists to improve the success rate. Also, other types of regional anesthesia may be used in case of failure as an alternative and in a study by Shon et al proposed that saddle block was more effective than lumbar puncture or caudal block for depressing anal sphincter tone.[15]

The complications that were recorded in the present study were small hematoma at the injection site in one of the cases and mild hypotension (neurogenic shock) in another case and both of them improved on conservative with no sequelae. The anesthetic complications rate in our study was (0.99%). The reported clinical complications that associated with regional anasthesia like the seizure, severe hypotension, post spinal headache and iatrogenic injuries were not detected in our study. Caudal blockade can be used whenever the surgical area is primarily innervated by the sacral and lower lumbar nerve roots.

5. Conclusion

The study showed that the caudal anesthesia is effective for surgical management of anorectal diseases and the surgeon can effectively and safely perform the caudal anesthesia to his patients and this study opens the door to the surgeons to enter the field of the regional anesthesia. The success rate improved with gaining more experience. In addition, the study showed that the morbidity due to caudal anesthesia is very negligible and there was no mortality.

Conflicts of interest

None declared.

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