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Volume 14
1985

BLACKWELL SCIENTIFIC PUBLICATIONS
Oxford London Edinburgh Boston Palo Alto Melbourne

Study of incidence of post-operative pain among Nigerian patients

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Summary

The incidence of post-operative pain was determined among 200 adult Nigerian patients who presented for a variety of surgical procedures. The overall incidence of moderate to severe post-operative pain was 68% while the remaining 32% complained of only mild pain. When the results were categorized according to the site and type of surgery, the highest incidence of pain were found following surgery of anorectal region (90%), thoracotomy (88%), major joints (88%) and upper abdomen (80%). The use of opiates pre-operatively for premedication and anaesthetic techniques using intra-operative opiates or ketamine delay the onset and reduce the severity of post-operative pain. No sex difference was observed but elderly patients (especially above 50 years of age) tended to have lower pain ratings.

Résumé

L'incidence des douleurs post-chirurgicales au sein d'une population des 200 Nigériens adultes a été déterminée. L'incidence des douleurs moyennes ou sévères a été de 68%, tandis que 32% de cette population s'est plaint seulement des douleurs peu importantes. D'après la classification des résultats selon le type et la région d'intervention, il s'en est suivi que l'incidence des douleurs sévères a été plus élevée pour les types d'interventions suivantes: de la région anorectale (90%), la thoracotomie (88%) des articulations majeures (88%), de l'abdomen antérieur (80%). L'emploi d'opioïdes avant l'opération comme médication et l'emploi

des techniques anesthésiques à base d'opioïdes intra-opératoires ou du Ketamine a retardé et a réduit la sévérité des douleurs. Aucune différence chez les sexes n'a été observée, toutefois les patients âgés (surtout au dessus de 50 ans) avaient tendance à ressentir moins les douleurs.

Introduction

Many patients who have had surgical operations develop pain of varying severity in the post-operative period. Pain in the post-operative period is undesirable not only from the point of view of patient comfort but also from the complications associated with pain. For instance, pain may prevent the patient from coughing well or breathing deeply, thereby promoting pulmonary micro atelectasis and ventilation/perfusion derangements which result in post-operative hypoxaemia (Hamilton, 1965).

The aim of this study is to establish the incidence and severity of pain following different types of surgery in Nigerian patients and to compare this with published studies on caucasians. This is pertinent because racial factors have been reported to play a part in pain tolerance (Woodrow, *et al.*, 1972).

The two criteria commonly employed for pain assessment in clinical pain studies are (i) patient-volunteered information of pain (pain scores); and (ii) analgesic requirement. Both methods have the disadvantages of patient dependency and therefore are liable to bias. Unfortunately, there is at present no completely objective method of clinical pain assessment which does not involve patient's input. Correlation of clinical pain with various endogenously released pain-related substances has been poor.

In this study, the criterion used for pain assessment was patient's volunteered pain scores. A pain score of 1 (mild pain) represented pain which was not severe enough to require an analgesic. The pain scores of 2 (moderate pain) and 3 (severe pain) both represented pain which required narcotic analgesic, the difference being only in the severity.

Materials and methods

A total of 200 patients were studied. There were 120 males and eighty females. The ages were between 18 and 72 years. The various types of surgery are as listed in Table 1. The study was confined to in-patients for easy follow-up; otherwise patient selection was random.

Table 1. Types of surgery

Surgery	No. of patients
Neck	25
Thoracotomy	25
Upper abdomen	25
Lower abdomen	30
Inguinal hernia	30
Extremities	20
Major joints	25
Ano-rectal	20
Total	200

Patients were interviewed by the author on the day of surgery (day 1) and also on the day

after surgery (day 2) with regards to their post-operative pain. Mild pain was scored 1, moderate pain 2 and severe pain 3. This simplified scoring was adopted in preference to the linear analogue scale ranging from 0 to 10 due to the level of literacy of the patients. In addition, patient was asked about the site of the pain. This is pertinent because about 28% of Nigerian in-patients experience post-operative 'scoline' pain which is related to the administration of suxamethonium, a muscle relaxant commonly given to provide relaxation for endotracheal intubation (Famewo & Elegbe, 1982) and not to the operation wound site.

Results

Pain scores. Overall, forty-eight patients (i.e. 24%) had only mild post-operative pain, (pain score of 1), eighty-two patients (i.e. 41%) had moderately severe pain (pain score of 2) while seventy patients (i.e. 35%) had very severe pain (pain score of 3). Further analysis of the pain scores in respect of the different types of surgery is shown in Table 2. Patients with the highest pain scores are those who had ano-rectal surgery, thoracotomy, major joint surgery and upper abdominal surgery.

Premedication. One hundred and twenty patients received narcotic premedication with pethidine (about 1 mg/kg) or morphine (about 0.1 mg/kg), thirty patients received 10 mg diazepam premedication while fifty patients received no premedication. Patients who received premedication had lower pain scores than those unpremedicated (day 1 only).

Table 2. Patient pain assessment following different types of surgery

Type of surgery	Mild pain (pain score: 1)	Moderate pain (pain score: 2)	Severe pain (pain score: 3)	No. of patients
Neck	14 (56%)	8 (32%)	3 (12%)	25
Thoracotomy	3 (12%)	11 (44%)	11 (44%)	25
Upper abdomen	5 (20%)	8 (32%)	12 (48%)	25
Lower abdomen	10 (33%)	12 (40%)	8 (27%)	30
Inguinal hernia	16 (53%)	12 (40%)	2 (7%)	30
Extremities	11 (55%)	7 (35%)	2 (10%)	20
Major joints	3 (12%)	10 (40%)	12 (48%)	25
Ano-rectal	2 (10%)	8 (40%)	10 (50%)	20
Total	64 (32%)	76 (38%)	60 (30%)	200

Anaesthetic technique. Patients who had 'balanced anaesthesia' technique with intra-operative use of opiates, and those who had Ketalar anaesthesia, had lower pain scores on the operation day (Table 3). There was no difference in the pain scores by day 2.

Sex. No significant difference was found between the incidence of pain in the males and females in this study.

Age. The older patients, especially those above 50 years of age expressed lower pain scores when compared with the younger patients who had similar surgical operations (Table 4).

Discussion

The reported incidence of post-operative pain in the literature vary widely. Reasons for this include non-uniformity of the criteria used as well as the lack of a totally objective method of clinical pain assessment. As pointed out by Sternbach (1975), pain expression (i.e. readiness to complain of pain and seek relief), depend not only on the presence of pain, but also on such factors like personal ego, cultural outlook, religious attitude and other psycholog-

ical factors which Fordyce *et al.* (1973) termed as 'pain behaviour'. Plasma levels of such chemical mediators like endorphins and prostaglandins have not correlated well with the presence or absence of pain. Methods presently available for assessment of pain in the clinical setting are therefore all patient-dependent, thus introducing the possible factor of patient bias.

Pain incidence and type of surgery. Jaggard, Zager & Willehins (1950) reported that out of 1000 patients who had general surgical or urological operations, 36% did not require post-operative analgesia. Papper, Brodie & Rovenstine (1952) in their study of patients who had laparotomy and thoracotomy, reported that 23% did not require analgesics post-operatively. Keats, Beecher & Mosteller (1950), reported that 21% of 104 patients who had abdominal surgery required either no dose or only one dose of opiate post-operatively. Some of the reported incidence of post-operative pain is shown in Table 5 for comparison with the present study. The more severe post-operative pain occurred following thoracotomy, major joint operations, ano-rectal and upper abdominal surgery.

Swerdlow, Starmer & Daw (1964) also found that patients who had upper abdominal surgery received greater amount of analgesics and

Table 3. Pain incidence (operation day 1) and anaesthetic technique

Anaesthetic technique	Mild pain (pain score: 1)	Moderate pain (pain score: 2)	Severe pain (pain score: 3)
Ketalar anaesthesia (30 patients)	20 (67%)	8 (27%)	2 (6%)
Balanced anaesthesia (90 patients)	28 (31%)	38 (42%)	24 (27%)
Halothane general anaesthesia (80 patients)	16 (20%)	30 (38%)	34 (42%)

Table 4. Pain incidence and age of patient

Anaesthetic technique	Mild pain (pain score: 1)	Moderate pain (pain score: 2)	Severe pain (pain score: 3)
Under 50 years of age (146 patients)	34 (23%)	60 (41%)	52 (36%)
50 years of age and above (54 patients)	30 (55%)	16 (30%)	8 (15%)

Table 5. Comparison of incidence of post-operative pain

Surgery	Parkhouse <i>et al.</i> (1961) %	Loan & Dundee (1967) %	Famewo (1983) %
Neck	—	22	44
Thoracotomy	—	74	88
Upper abdomen	82	63	80
Lower abdomen	75	51	67
Inguinal hernia	48	23	40
Extremities	—	27	45
Major joints	—	—	88
Ano-rectal	—	—	90

obtained less pain relief from any single dose of analgesics than did patients who had lower abdominal surgery. Incisions that involve cutting or damaging many nerves (vertical or diagonal incisions) are usually more painful than those which involve only a few nerves like in horizontal incisions (Bonica, 1953). In ano-rectal operations, muscle spasm is a contributory factor in the pain experienced.

Premedication and pre-operative preparation.

With regards to opiate premedication, the finding in this study is similar to that of Gravenstein and Beecher (1957) who found that the initial request for post-operative analgesia was delayed in those premedicated, but that the overall incidence of pain was similar to those of the unpremedicated patients. The relationship between pre-operative information about the proposed surgery and the expected pain experience during recovery was not evaluated in this study. However, Egbert *et al.* (1964) reported that patients who had pre-operative information as well as intense preparation, including cognitive means of dealing with pain and stress, had significant reductions in post-operative analgesic requirements when compared with controls. Conversely, Langer, Janis & Wolfer (1975) found preparatory information to be totally ineffective as a means of reducing post-operative pain. However, preparatory information, in their study, consisted only of a general information about the surgery, possible complications and expected location of pain.

General anaesthetic technique. The onset of post-operative pain was delayed in patients that received intra-operative opiates or Ketalar

anaesthesia in this study. This is similar to the finding of Parkhouse, Lambrechts & Simpson (1961) who reported that when anaesthetic agents with marked analgesic properties were used (e.g. Trilene, ether and methoxyflurane), the immediate post-operative analgesic requirements were less. Corssen, Domino & Sweet (1964), Martin *et al.* (1967) also reported a reduction in post-operative analgesic demand when opiates have been used intra-operatively to supplement anaesthesia.

Sex. There was no sex difference in the incidence of post-operative pain in this study. This finding is similar to that of Parkhouse *et al.* (1961), Belville *et al.* (1971) and Keats *et al.* (1950). However, Swerdlow, Murray & Daw (1963) reported that female patients obtained more prolonged pain relief from a single dose of an analgesic drug compared with male patients. Also, Woodrow *et al.* (1972) reported higher pain tolerance among men as compared with women.

Age. In this study, the older patients especially those above 50 years of age complained less frequently of pain than their counterparts following similar surgery. This is an agreement with the findings of Pratt & Welch (1955), and Belville *et al.* (1971), but contrary to that of Woodrow *et al.* (1972) who reported that pain tolerance decreased with increasing age in both sexes. Keats *et al.* (1950) found no relationship between post-operative analgesic requirements and the age of the patient. It is suggested that the apparent lower incidence of pain in this older age group may be related to greater willingness to accept and cope with the pain

rather than the presence of a higher pain threshold.

Racial factor. The pain incidences in this study lie in between the incidences published by Parkhouse *et al.* (1961) and Loan & Dundee (1967), both in caucasians — Table 5. In other words, there is no apparent difference in the incidence of postoperative pain between Nigerians and caucasians. Woodrow *et al.* (1972) had reported that Whites show a higher pain tolerance than blacks. Winsberg and Greenlick (1967) however reported no difference between Negro and white patients in pain experienced during normal childbirth.

Finally, in the appraisal of the results of different pain studies, one should bear the following points in mind: (i) pain arising from a clinical pathological process has a different connotation from experimentally-induced pain; (ii) studies in which pain threshold is used often produce results different from when pain tolerance is used; and (iii) the parameters used for pain assessment should be comparable.

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(Received 18 January 1985; accepted 22 January 1985)