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A follow-up study of the postoperative period at the hospital in patients scheduled for one-day surgery

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Abstract

During a period one-day patients were followed concerning pain and nausea during their stay at the hospital. The majority of patients were subjected to arthroscopic surgery of different joints. General anaesthesia was used in 71 patients, spinal anaesthesia was performed on 22 patients and local anaesthesia on 89 patients. One hundred and ten patients received NSAID's and 47 patients had paracetamol as premedication, whereas 14 patients had anxiolytic premedication and 13 patients had antiemetics preoperatively. There were no differences between age, type of surgery and type of anaesthesia with regard to pain postoperatively. In the postanaesthesia care unit, ketobemidone i.v. was the drug of choice and in four patients complemented with ketorolac i.v. At the day surgical unit, orally-given paracetamol and dextropropoxyphene were the drugs used. However, ketobemidone had to be orally administered in 40 patients in order to achieve pain scores less than four. In the majority of the patients, the described pain management was sufficient, resulting in pain scores <4/10 (VAS). Nausea and vomiting were minor problems. One patient was admitted over night due to severe pain.

Keywords: Analgesia; Daysurgery; Nausea; Pain; Postoperative

1. Introduction

Day surgery is now established in most Western countries. Low costs have been one of the major motives for this kind of surgery, but attention has lately also focused on good patient care, low complication rates and high acceptance of the service by the patients. In a decreasing economy, day surgery has become more and more important and consequently generated a possibility to allocate or cut resources for medical use.

Of fundamental importance is that the care delivered is of a high quality. Information about what has been done, by whom and how it has been done is crucial. Consequently, you need data describing your unit. Quality control will make it possible to improve and reform the daily work at the unit, such as pain management and treatment of nausea and vomiting. Other parameters such as how many patients do not attend, how much of different drugs are wasted also have to be notified and measured accordingly to improve these issues to a set standard [1]. Since there is a focus on costs and utility today, there is a risk that subjective

Table 1
Demographic data

Number of patients	*183*
Age (median and range)	35 (8-80)
Sex (M:F)	107:76
Type of surgery	
Orthopedic	
Knee	117
Shoulder	13
Other	12
General surgery	
Inguinal hernia	13
Varicose veins	4
Porth a cath	8
Other	16

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Table 2
Number of subjects subjected to various types of anaesthesia with respect to main surgical procedure

Type of surgery	*Type of anaesthesia*		
	Local anaesthesia	*Spinal anaesthesia*	*General anaesthesia*
Orthopedic surgery (n = 142)	72	12	58
General surgery (n = 41)	17	11	13
Total number	89	23	71

aspects on surgery, and most importantly, from the patients' point of view, such as pain and well-being are down-prioritized and forgotten.

At our day surgery unit urology, orthopaedic, general and plastic surgery are represented. Urological and plastic surgery patients were excluded due to small numbers. We decided prospectively to study orthopaedic and general surgery patients at our unit during a period of 4 weeks with respect to pain, nausea, premedication, and how much analgesics were used before leaving the hospital. We were interested in how these drugs were used related to surgery, type of anaesthesia and age. We have been especially interested in pain management, to find out the position of our management related to a set standard. Our hospital has a set standard or aim for postoperative pain management. Pain intensity measured with the visual analogue scale (VAS) should not exceed 4/10 or 40/100 at any time postoperatively. An effective management of pain at the hospital is of fundamental importance and, what is more, the foundation to allow the patients a decent postoperative period at home.

2. Methods

2.1. Patients

The present period includes the results from 183 consecutive orthopaedic and general surgery patients operated on at the day-care unit at our hospital during 1 month, Table 1. The orthopaedic group consisted of 142 patients, and general surgery group involved 41 cases during this observation period. The main reason for surgery was orthopaedic problems localized to the knee joint, 117 patients. Eighty nine patients were operated on under local anaesthesia (Table 2). When general anaesthesia was employed, propofol as anaesthetic drug and alfentanil as analgesic drug were used. Lidocaine 5% with glucose 8% was used for spinal anaesthesia and the drug of choice for local anaesthetic knee arthroscopy was prilocaine 0,5% with adrenaline. We used our anaesthesia and postoperative records for this study. Pain intensity was measured with the visual analogue scale (VAS). The VAS consisted of a 10 cm long horizontal line equipped with the words 'no pain' and 'worst pain ever', at the left and right hand extremes, respectively. The patients were asked to use the VAS at the end of their stay at the post-anaesthesia care unit (PACU) (resulting in pain measurements within 1 h following surgery) and at the ambulatory unit (pain measurement at 2–6 h postoperatively). Opioids, NSAID's and other analgesics used were used according to routine and were recorded. Premedication and antiemetic drugs were documented in the same way. For each patient, the consumption of different drugs was registered. Age, sex, type of anaesthesia and surgery were also noted. All recordings were made directly following surgery at PACU/ambulatory unit and until discharge from the hospital. All data were collected prospectively. During this observation period, the same anaestesiologist and the same nurses at the day surgery unit were working.

3. Results

3.1. Premedication and anaesthesia

A majority of the patients 163/183 (90%) received premedication, 110 patients were administered a NSAID drug (diclofenac 50–100mg) rectally and 47 patients received paracetamol 1 g rectally, whereas 29 patients needed anxiolytic or antiemetic treatment (Table 3). The type of NSAID's used did not vary significantly among patients subjected to various types of surgery. Anxiolytics as a premedication was given to

Table 3
Type of premedication given to patients

Type of premedication	*Number of patients*
Anxiolytics	
Midazolam	14
Analgesics	
Diclofenac	110
Paracetamol	47
Antiemetics	
Metoclopromide	13
Number of patients not receiving premedication	20

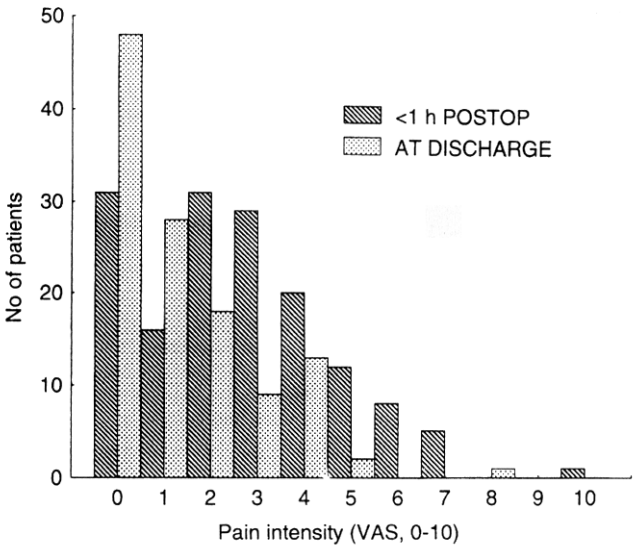

Fig. 1. Number of patients reporting a certain pain intensity postoperatively at the PACU and at discharge from the hospital. Pain intensity measured with the VAS (100 mm), recoded into a 0–10 scale.

subjects receiving local/spinal anaesthesia (8/14) as well as to those receiving general anaesthesia (6/14), but only to a limited number of all patients (14/183). Administration of antiemetic drugs was performed in 13 patients. The anaesthetic techniques used were local anaesthesia, spinal anaesthesia or general anaesthesia (Table 2). Due to the nature of surgical procedures included in the material, local and general anaesthesia were used in a majority of patients and in comparable proportions (Table 2). A significant number of orthopaedic cases (117/142) included knee joint arthroscopic diagnostic and/or surgical procedures and local anaesthesia was most often the main technique used in these instances (72/117). General anaesthesia was the dominating technique in orthopaedic shoulder surgery. Spinal anaesthesia was mainly used in those operated on due to inguinal hernia repair, varicose veins and in a minority of the patients subjected to knee surgical procedures (8/117).

3.2. Postoperative pain and use of analgesics

Pain intensity was recorded from the first hour postoperatively until discharge from the day-care unit. All patients reported a significantly higher pain intensity early postoperatively [VAS mean 2.6 (2.28–2.92; 95% confidence interval (CI))] as compared to at discharge [VAS mean 1.3 (1.07–1.64; 95% CI)] (Wilcox, $P < 0.0001$), Fig. 1. This was true also when specifically considering age and type of surgery, the latter illustrated in Fig. 2A and B. Pain intensity did not differ significantly with respect to type of surgery or anaesthesia as well as age, during the early postoperative period or at discharge. It should, however, be noted that 54/71 patients subjected to general anaesthesia also received local anaesthesia infiltrated into the wound at the end of surgery. Analgesics of varying kinds was used postoperatively (Table 4). The majority of patients received paracetamol and dextropropoxyphene in combination orally. To a lesser extent, more potent opioids were used, dominated by ketobemidone. The median ketobemidone doses i.v. and orally were 2.5 mg (max 5 mg) and 5 mg (max 10 mg), respectively. Alfentanil was used i.v. in six cases early postoperatively due to intense pain (5 cases 0.25 mg and 1 case 0.65 mg). No significant difference in need for analgesics was detected with respect to type of surgery, anaesthesia or age.

3.3. Postoperative nausea

Only seven patients experienced mild nausea, not needing antiemetic drugs, and no patients vomited during their stay at the hospital. Five of the patients were males. One patient had prophylactically received antiemetic drugs and one patient was administered opioids after the surgical procedure. Three patients had spinal anaesthesia, three had general anaesthesia and one patient had surgery under local anaesthesia. No patient was admitted due to nausea and vomiting.

4. Discussion

The patient is supposed to go home 3–4 h after completed surgery, in a good condition with postoperative pain under control, when scheduled for ambulatory procedures. A well-balanced programme for pain relief is necessary to obtain this goal. Adequate doses of analgesic drugs without creating nausea and tiredness have to be titrated for successful pain treatment permitting discharge of the patient.

In the present investigation, almost every patient received diclofenac or paracetamol preoperatively to secure a base for analgesia and the discussion on preemptive analgesia has also influenced us to start giving these drugs already preoperatively [2–4] although recent data are less convincing [5].

Patients operated on in general- or spinal anaesthesia were transferred to PACU for postoperative care. In the PACU only i.v. administration of opioids was used and ketobemidone was the first drug of choice. We administered 2.5–5 mg of ketobemidone i.v. in patients needing analgesics to avoid nausea and tiredness. If 5 mg of ketobemidone was not sufficient, ketorolac 15 mg i.v. was tried. Only three patients needed supplementation of ketorolac. Consequently, a standard program of analgesics, 2.5–5 mg of ketobemidone i.v. was given at PACU and followed by paracetamol and dextropropoxyphene orally given at the ambulatory unit

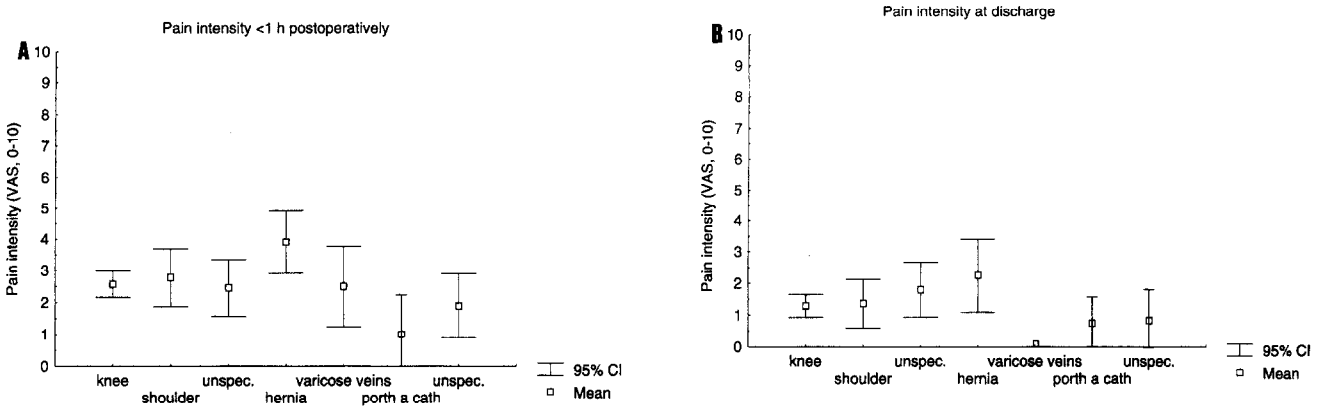

Fig. 2. (A) and (B) Pain intensity in patients subjected to various types of surgery. Mean pain intensity with 95% confidence interval represented by whiskers.

was, in the majority of cases, quite enough. Patients operated on under local anaesthesia (the majority of these cases (117) were knee joint arthroscopy) arrived directly to the ambulatory unit and sometimes these patients developed severe pain postoperatively. The regime used was alfentanil 0.25–0.5 mg i.v. and at the same time ketobemidone 5 mg–10 mg and paracetamol 1000 mg was given orally. This programme was efficient and most patients scored 2–3 on the VAS after a few minutes due to alfentanil and then when ketobemidone started to work, pain intensity continued to remain between 2–3. Only six patients, however, had to be treated with alfentanil in the ambulatory unit. We aggressively combat pain, and the patients rated pain intensity using the VAS immediately after arrival to the ambulatory unit and patients were given tablets of analgesics within minutes after arrival, if pain intensity exceeded 3/10. Our results indicate that orally-given analgesics using NSAID's and weak opioids are effective in clinical routine in the types of surgery presently studied.

Pain management in the hospital is not really a problem. A patient in severe pain is treated accordingly and aggressively and, if necessary, a stay over night in the hospital is arranged. During the month of observation for the present investigation, however, only one patient was admitted which corresponds with other studies with an unanticipated admittance of about 1% [6–8]. A successful treatment of pain may also diminish the risk to develop nausea and vomiting. Jacobsson et al. noted a positive relationship between pain and postoperative nausea and vomiting [9]. However, others have not found any correlation between pain and vomiting in patients undergoing knee joint arthroscopy [10], a finding supported by our data. Our pain intensity values are, however, relatively low which perhaps influences the relationship between pain and nausea/vomiting.

Table 4
Type of analgesics given to patients postoperatively

Type of analgesics	*Number of patients*
NSAID's	
Ketorolac	4
Paracetamol	124
Opioids	
Alfentanil	6
Dextropropoxyphene	127
Ketobemidone	
inj	41
oral	40
Morphine	8
Pethidine	2
Patients not receiving analgesics postoperatively	0

Nausea was in fact a minor problem, since only seven of our patients experienced mild nausea, although this condition is one of the major reasons for unanticipated admittance [6]. Other investigators report, regarding inpatients, nausea and vomiting in 20–40% of the patients [11]. A careful interview of the patients is recommended and appropriate measures taken when increased risk exists such as earlier experience of nausea and vomiting in connection with surgery, motion sickness and certain types of surgery. Propofol is our drug of choice for general anaesthesia and one advantage of propofol is its' antiemetic quality [12,13]. Alfentanil when used, of course, increases the risk for nausea and vomiting [14]. Only one of our patients experienced nausea in spite of preoperatively given metoclopramide and only one patient feeling nauseous had been administered ketobemidone during the postoperative period. Out of the seven patients experiencing nausea, three had spinal anaesthesia, three had general anaesthesia and one patient had surgery under local anaesthesia. Other authors report an advantage of regional anaesthesia compared to general anaesthesia concerning nausea/vomiting [15]. Factors favouring regional anaesthesia are that no opioids have to be used preoperatively, a longer duration of analgesia postoperatively

and, thereby, a reduced need of opioids postoperatively, and reduced sedation. Type and duration of surgery are also probably very important parameters involved in the problem of nausea and vomiting.

Metoclopramide is the first antiemetic drug of choice at our unit [16] and 13 patients received this drug preoperatively. Only one of these 13 patients experienced nausea indicating a good effect of the drug. No patient was unanticipatedly admitted due to nausea and vomiting during this month of study.

Other drugs used as antiemetics are droperidol or ondansetron. In patients with a severe history of motion sickness, experience of vomiting in connection with anaesthesia and surgical procedures linked with a high incidence of nausea and vomiting, we try the above mentioned drugs [17,18]. During this observation period, none of the drugs were used.

Local anaesthetic drugs for postoperative pain management are increasingly used. Wound infiltration and subfascial infiltration at inguinal hernia repair with local anaesthetics are effective methods for successful postoperative pain relief [19]. A new approach for postoperative pain management for arthoscopy has developed during recent years and made this kind of surgery extremely suitable for one-day surgery. Several studies have reported beneficial effects of intra-articular opioids given alone or in combination with local anaesthetic drugs, pre- and postoperatively [20–22]. A programme for administration of opioids and local anaesthetics postoperatively into the joint is now in progress at our unit.

In most cases, a combination of local anaesthetics/peripherally given opioids and small doses of i.v.-administered opioids and/or NSAID's is the base for postoperative pain management followed by orally-given weak opioids combined with paracetamol.

Quality of care is a most important issue and should be assessed continuously in quality improvement programmes. To collect data about pain management, complications and other objectives concerning quality is an ongoing process and must be an integral part of one-day surgery. It is most important to monitor factors of high importance for patient well-being such as pain, a factor not normally controlled in quality control programmes where economical factors dominate. Our results indicate that the use of a well-structured programme for postoperative care results in low and well-tolerated pain intensity in the majority of patients.

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