Opinion Survey of Analgesia for Abdominal Pain in Israeli Emergency Departments

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Abstract

Background: The long-standing and ongoing controversy regarding administration of analgesia to patients with acute abdominal pain prior to final diagnosis has not yet been resolved, despite considerable research. Consequently, wide variations in clinical practice exist.

Objectives: To determine the motives, attitudes and practices of emergency physicians, internists and surgeons in Israeli emergency departments regarding the administration of analgesia before diagnosis in patients with acute abdominal pain.

Methods: Questionnaires were completed by 122 physicians in 21 EDs throughout Israel and the replies were analyzed.

Results: Most EDs did not have a clear policy on analgesia for undifferentiated abdominal pain, according to 65% of the responders. More internists (75%) than surgeons (54%) (P = 0.02) and more emergency physicians (81%) than all other physicians (60%) (P = 0.05) held this opinion. Most respondents (64%) supported administration of analgesia pre-diagnostically. Support for analgesia was significantly stronger among internists (75%) compared to surgeons (52%) (P = 0.03). Despite this wide support, most respondents (68%) indicated that analgesia was rarely or never given prediagnostically and, when it was, more surgeons (58%) than other physicians made that decision. Most internists (73%) and all surgeons reported that patients receive analgesia only after being examined by surgeons. Time allocated to the ED (part or full-time) significantly (P = 0.02) influenced decision-making, with 51% of part-time physicians vs. 25% of full-time opposing prompt administration of analgesia. Opinions on who should decide were divided according to medical specialty, with surgeons and internists almost opposed, as well as by physician age and percent of his/her time spent working in the ED. More surgeons than internists (P = 0.0005) reported that analgesia sometimes interfered with making a diagnosis. Most physicians (90%) stated that opiates impede diagnosis to some extent. However, 58% of them supported the administration of opiates, more or less frequently. Intramuscular diclofenac was the most preferred analgesic, followed by intravenous morphine and pethidine; individual preferences extended beyond the list of actually administered drugs.

Conclusions: There is no consensus on the administration of analgesia for undiagnosed acute abdominal pain in EDs in Israel. Physicians' attitudes are influenced by training, experience, and percent of personal time allocated to work in the ED.

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Approximately one-quarter of patients admitted to emergency departments complain of acute abdominal pain [1]. Such pain is often not treated promptly because of differences of opinions and attitudes on the appropriateness of administering analgesia – particularly opiates – for undiagnosed non-traumatic acute abdominal pain. Many physicians consider pain relief as a potential interference with diagnosis [2–4].

An editorial in the *British Medical Journal* in 1979 advocated that immediate emergency care should include prompt administration of intravenous analgesics without waiting for a diagnosis [5]. This was vehemently disputed [6–8] and provoked a series of prospective studies to resolve the controversy. The first, on 288 patients, found that sublingual administration of buprenorphine did not affect the clinical diagnosis, although the presentation of some physical signs appeared attenuated [9]. Subsequent investigations on the administration of alkaloids combined with opiates [10], or of morphine [11,12] led to the same conclusion, even though pain was considerably reduced. Another study found that prompt pain control with morphine decreased the sensitivity but increased the specificity of ultrasonic imaging, and did not modify the surgical decisions in suspected acute appendicitis [13]. Mahadevan and Graff [14] reported that pain relief with tramadol normalized the physical signs of suspected appendicitis much less than placebo (saline). Recent clinical studies found that morphine did not obscure the physical signs or hinder diagnosis more than placebo in children [15] or adults [16] complaining of acute abdominal pain.

Despite this evolving body of evidence that early analgesia for acute abdominal pain does not mask diagnosis or affect course and outcome, changes in the attitudes of physicians have not kept pace. Surveys in departments of emergency medicine have indicated that many patients failed to receive pain relief until a surgeon examined them, diagnosis was made, or a treatment plan decided upon [2–4]. Some authors have claimed that the delay in treating abdominal pain in EDs is the result of apprehension that patients might become unable to provide informed consent. In one study, more than half of the participants expressed this opinion, and 78% admitted considering the requirement for informed consent when deciding to delay analgesia; 57% of the physicians checked whether analgesics had been administered before obtaining consent, indicating concern about potential effects of analgesics on mental competence [17]. On the other hand, most of the patients in two recent studies denied that pain or its relief hampered their judgment when asked to consent [17,18].

Israeli EDs are staffed by a mix of emergency physicians, internists and surgeons, with the latter usually being primarily responsible for patients admitted with a chief complaint of abdominal pain. The objective of the present study was to survey practices of administering analgesia for acute abdominal pain in

ED = emergency department

Israeli EDs, to examine the attitudes of ED physicians regarding its administration, and to identify the factors affecting such practices.

Materials and Methods

Study design, setting, participants and measurements

Our survey was based on a questionnaire distributed during August 2002 to 236 physicians in 27 Israeli EDs. The items covered demographic information, existing ED practices regarding analgesia for acute abdominal pain and related individual attitudes.

Statistics

Statistical analysis was performed with SAS software (SAS Systems v8.02), and the significance level was set at $P < 0.05$. Frequencies of response were analyzed with the chi-square test and ordinal categorical responses with the Mann-Whitney test. The responses of each physician to nine specific questions on the administration of analgesia comprised the Index of Agreement, which was normalized by the number of complete responses. Student's *t*-test and two-way analysis of variance were used to test the association of the various variables with the Index.

Results

The study group included 122 physicians from 21 medical centers (78% of the 27 hospitals the questionnaire was sent to); the response rate was 52%. The respondents' mean age was 43 $\pm$ 7.9 years (range 29–60), and 79% were males. Table 1 shows the breakdown of the respondents' gender, age and medical specialty.

Sixty-five percent of respondents indicated that there was no clear and consensual policy on the administration of analgesia for acute abdominal pain in their ED. This opinion was significantly more prevalent among internists than surgeons (75% vs. 54%, respectively, $P = 0.02$), and among emergency medicine specialists more than other specialists (81% vs. 60%, $P = 0.05$). There was a consensus of response to this question in 8 of the 21 EDs, with agreement exceeding 75% in 12 EDs (57%).

Half of the respondents reported that analgesics were only rarely administered for acute abdominal pain before diagnosis was made, and 18% claimed that this never happened. In contrast, 32% indicated that analgesia was frequently given before diagnosis, and one physician claimed that this was always so. Age significantly influenced these responses: 63% of the younger physicians claimed that analgesia was seldom administered in their ED, compared to 40% in the older group ($P = 0.02$). A similar significant discrepancy ($P = 0.01$) was observed between full and part-time physicians, who maintained that analgesia was rarely (45% and 59%, respectively) or never (11% and 25%, respectively) administered before diagnosis. Approximately 75% of the internists claimed that pain was not relieved before surgical examination in their ED. All the surgeons claimed that analgesia was never given immediately, 27% of them reported that it was administered after physical examination, and 73% that it was administered only after diagnosis and treatment management had been determined.

Our analyses revealed that the decision to provide analgesia in the ED was made more frequently by surgeons (58%) and less commonly by any other physician (36%). Surgeons, much more than internists, claimed that this decision was made by a surgeon (83% vs. 34%, respectively, $P < 0.001$) in their ED. The opinions on who should decide on analgesia for acute abdominal pain also differed among the subgroups [Figure 1]. Almost 50% of the physicians, 82% of the surgeons and 19% of the internists ($P < 0.001$) considered that the responsibility for this decision was the surgeons'. Only 2% of the physicians and none of the surgeons believed that it should be an internist who decides in this matter. The making of these decisions by emergency medicine experts or by any non-surgeon physician was acceptable to significantly more internists than to surgeons. These differences of opinion were also reflected in the responses of the younger and older physicians, with the former favoring the decision being made by a surgeon ($P = 0.005$). The disagreement was also evident from the divergent opinions of part-time versus full-time ED staff members ($P = 0.002$) and from those of emergency medicine experts compared to those of other specialists ($P = 0.002$) [Figure 1].

Table 2 lists the analgesics of choice for acute abdominal pain actually administered in the participating EDs and the analgesics preferred by the respondents. Intramuscular sodium diclofenac (Voltaren®, Novartis) was the most popular, followed by intrave-

Table 1. Demographic and professional characteristic of the study group (%)

	Overall (n=122)	Surgeons (n=59)	Internists (n=63)
Male gender	80	88	72
Age group			
Younger ($\leqslant$ 40 years)	42	61	39
Older (>40 years)	58	39	61
Status			
Full-time	65	31	69
Part-time	35	75	25
EM specialists	25	16	84

EM = emergency medicine

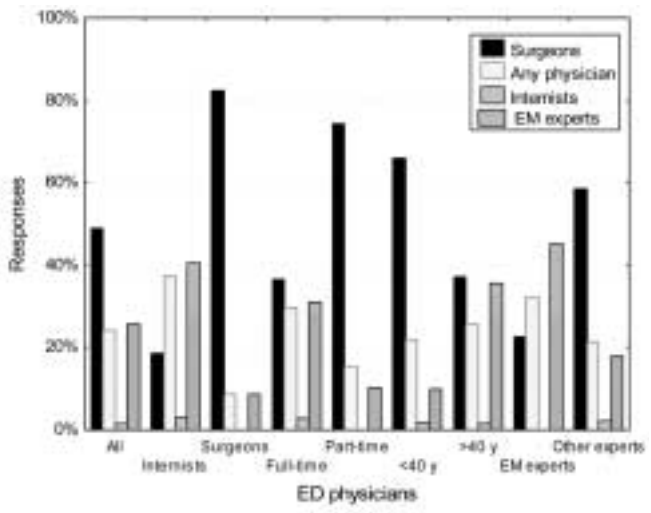

Figure 1. Opinions of emergency department physicians on who should decide upon analgesia for acute abdominal pain, according to physician subgroups. EM = emergency medicine, Other experts = physician in fields other than EM.

Table 2. Responses on analgesics used in emergency departments for acute abdominal pain, the analgesic of choice, and the rate of identical responses for both among the physician subgroups (%)

Drug	Used	Preferred	Agreement
Diclofenac i.m.	33.0	28.0	90
Morphine i.v.	20.3	22.9	95
Pethidine i.m.	19.5	14.3	88
Pethidine i.v.	18.6	20.3	90
Other per os	7.6	8.5	96
Morphine i.m.	4.2	3.4	96
Papaverine	11.0	9.3	
Dipyrone	2.5	0.9	

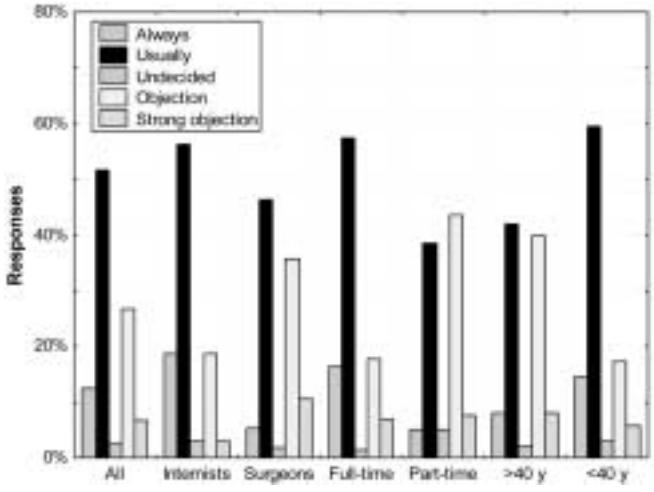

Figure 2. Attitude of emergency department physicians on the administration of analgesia for acute abdominal pain before establishment of diagnosis, according to physician subgroups.

nous morphine and pethidine. The preference of the participants agreed with the drugs actually administered [Table 2]. Ten percent of the emergency physicians indicated intravenous morphine as their drug of choice, compared to 1% of the others, while 26% of the surgeons preferred intramuscular pethidine compared to 5% of the internists ($P = 0.002$). Older physicians (35%) favored intramuscular diclofenac compared to younger ones (18%). Internists were more inclined to prescribe oral analgesics than were surgeons (14% vs. 2%, respectively, $P = 0.02$). Physicians who preferred opiates preferred prompt analgesia significantly more than did the other responders (85% vs. 58%, respectively, $P = 0.01$).

Fifty-seven percent of all responding physicians had no recollection of cases where analgesia interfered with diagnosis, 34% had experienced several such cases, and 9% recalled numerous episodes. Surgeons reported encountering these situations more frequently than internists did ($P = 0.0005$). Indeed, 80% of the study group reported that there was disagreement on this issue in their ED. Internists felt this dispute to occur more frequently than did surgeons ($P = 0.03$), and emergency physicians were aware of regular conflicts on this issue significantly more than were other ED physicians ($P = 0.0002$).

The personal attitudes on analgesia in acute abdominal pain are depicted in Figure 2: 34% of the respondents objected to analgesia when the abdominal pain was undifferentiated, with 7% of them expressing strong opposition. Conversely, 12% felt, as strongly, that analgesia should always be administered, while 52% felt that analgesia was sometimes justified before diagnosis. Two percent of the respondents had no opinion in this matter. Support for analgesia was significantly stronger among internists (75%) compared to surgeons (52%) ($P = 0.03$), and among full-time (74%) versus part-time (44%) staff members ($P = 0.02$).

Eight percent of the physicians claimed that opiates should be administered in all cases, 57% of the respondents supported the use of opiates in most cases, 31% opposed their use, and 4% had no opinion. Eighty-nine percent believed that opiates could affect diagnosis sometimes (50%), often (29%) or always (10%), while 11% insisted that they never do. The attitudes regarding the effect of opiates on informed consent were similar, with 79% considering them an obstacle. Surgeons, part-time staff members and younger physicians took this stand significantly more often than did their respective counterparts ($P = 0.02$ for each). The opposite was true for emergency medicine experts relative to the other specialists ($P = 0.02$).

The factors that influenced the decision on analgesia were ranked from 1 to 5. The intensity of pain was given a score of 5 by the internists, followed by the confidence in the diagnosis (a score of 4), concern that analgesia could influence diagnosis, expected delay of the surgical consultation, and the patient's request (a score of 3 each). A fear of criticism by surgeons did not influence the internists' decision. Emergency medicine experts were less worried than internists about the effect of pain relief on diagnosis ($P = 0.01$). Surgeons ranked these factors differently: the maximal influence (score 4.5) was attributed to their apprehension of potential interference with diagnosis, and they assigned less importance to the patients' requests (score 2). Female surgeons were more concerned than male surgeons about the wait for consultation by a senior surgeon ($P = 0.02$).

Personal experience had the strongest influence on these attitudes (67%), followed by the departmental policy (33%) and published studies (26%); each respondent could mark more than one option in this section. Among surgeons, younger physicians and part-time doctors, the effect of the ED policy was stronger, and the opposite was the case for emergency medicine experts ($P < 0.001$). The majority of respondents (55%) felt that there is insufficient information for establishing consensual guidelines on this issue.

The Index of Agreement, composed of responses to nine of the questions and indicating agreement with the administration of prompt analgesia for acute abdominal pain, was 46 ± 24 with Cronbach's alpha = 0.75. The Index was significantly higher among internists than among surgeons (50 vs. 30, $P < 0.0001$). The Index value for emergency physicians was the highest, and it differed significantly from that of the others (56 vs. 43, $P = 0.008$). It was higher among older compared to younger physicians (46 vs. 32, $P = 0.002$), and between the full-time and part-time ED staff members (48 vs. 28, $P < 0.0001$). Gender had no effect on the Index.

Discussion

Our findings concur with those of four similar surveys conducted in U.S. emergency departments and add to them a breakdown of responses by various professional and demographic subgroups of ED physicians. The first study, conducted on 440 members of the American Association of Emergency Medicine Physicians, found that 76% would administer analgesics only after surgical examination, and that 25% of patients with acute abdominal pain would not receive analgesics during their stay in the ED despite the recognition by 85% of the participants that pain relief does not interfere with diagnosis [4]. The second survey, conducted on 131 surgeons, indicated that 67% considered analgesia an impedance to diagnosis, and therefore 82% delayed relief of pain [2]. Another study that examined 100 referrals to a surgical ED for undiagnosed acute abdominal pain [3] concluded that 40% of patients received analgesics within 1 hour of diagnosis, 17% in the second post-admission hour, and 43% later. When categorized by the severity of pain, patients with severe pain waited for 2.3 hours on the average: one-third of them waited for more than 2 hours and 5% for more than 10 hours, while patients with moderate pain waited 6.3 hours. These findings conflicted with the statement by 79% of the surgeons in the same study that they administered analgesia even without a conclusive diagnosis. While two-thirds of the specialists reported that analgesia did not mask physical signs or interfere with diagnosis, almost one-half of the residents thought otherwise [3]. In contrast, emergency physicians from 60 EDs in the United States administered analgesia before the surgical examination, and only 15% of them consulted a surgeon in advance [19]. Their decision was most affected by the suffering of the patient (88%) and by reports in the professional literature (86%).

It is difficult to understand the attitudes of ED physicians when considering the clinical studies published in the last two decades [9–16,19], or to rationalize the contrast between the opinions expressed by the majority of the participants and their actual practice – while 64% support prompt analgesia, the majority practices it infrequently.

There are several explanations to the fact that most physicians did not adopt the conclusions of these clinical trials: a) These trials included a small number of patients – all trials together examined a total of 1,090 patients. Statistical analysis shows that the minimum number of patients needed is 1,500. b) Many trials suffered from structural flaws – in some, different physicians examined the patient before and after the administration of analgesia. In most trials, objective parameters were not set for examining the physical findings. c) Most of the trials were conducted outside the USA, which sets the tone in the medical world today. It can be assumed that similar trials, had they been conducted in the U.S., would have had more resonance.

Had these inconsistencies stemmed from inconclusive clinical evidence on the appropriateness of analgesia for acute abdominal pain, it would have been reasonable to expect all subgroups to respond similarly. In our current study, support for pre-diagnosis analgesia was stronger among internists, full-time ED personnel, older physicians and emergency medicine specialists, while the majority of surgeons was opposed to the administration of analgesics prior to a definitive diagnosis and surgical decision-making.

There were also substantial differences among our subgroups regarding factual data, such as the actual frequency of administration of analgesia and the specialty of the physician deciding upon it. Supporters of expeditious pain relief reported that administration of analgesia was actually frequent and claimed that every physician can prescribe it in their ED. Those favoring withholding analgesia until diagnosis reported a lower rate of analgesia administration and that surgeons were the primary decision makers. These divergent responses could stem from differences in clinical experience, training in a given specialty, and an overall clinical perspective, reflected by the importance surgeons and internists assign to the patient's request for pain relief – a score of 2.1 vs. 3 respectively.

In a recent survey [19], senior surgeons criticized the clinical work on expeditious analgesia prior to surgical examination, and provided examples where pain relief masked diagnosis of severe cases. This apprehension is reflected in the hesitation we noted on the part of part-time internists to prescribe analgesics compared to full-time ED internists. In addition, younger physicians were influenced more by "departmental policy," despite their replies to another item on the questionnaire that no such policy existed. This contradiction likely reflects a degree of their insecurity when facing undiagnosed acute abdominal pain, since no similar inconsistency was found in the responses of senior internists and emergency medicine specialists.

Morphine was only the second-choice analgesic, a consequence of the majority opinion that opiates can interfere with diagnosis and with the patient's providing informed consent. Indeed, more physicians who disagreed with this statement favored expeditious relief of pain. Also, more internists who favored immediate analgesia preferred oral drugs of reduced potency, and this was probably how they resolved the conflict between their desire to help and their concern about the effect of opiates.

Limitations and future questions

One shortcoming of the current study population was the high proportion of surgeons among the part-time staff and the low representation of women. The voluntary participation in the survey could also have skewed the outcome.

Conclusions

It can be concluded from the present study that there is no consensus or clear clinical practice on the administration of analgesia for acute abdominal pain in Israeli EDs, and that attitudes towards this issue are influenced by training, status and experience.

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Capsule

Enzyme movement along collagen

In vertebrates, the extracellular matrix (ECM) is a highly organized macromolecular assembly whose most abundant component is collagen. Degrading the extracellular matrix is important in many physiologic and pathophysiologic processes and is achieved by matrix metalloproteases (MMPs). Saffarian et al. show that collagenase, MMP-1, moves along collagen by a Brownian-ratchet mechanism of biased diffusion. The processive movement is independent of adenosine triphosphate hydrolysis and is achieved by coupling to the energy of collagen-strand hydrolysis. The enzyme cannot backtrack because the track behind it is gone.

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E. Israeli

A Riddle

???

Name two inherited diseases frequent in patients from Ashkenazi Jewish ancestry, located on the same locus in two different chromosomes, the sum of which chromosome numbers leads to a third chromosome related to a different condition, this time frequent in Sephardic Jews.

The answer:

Disease no 1: Cystic fibrosis (chromosome 7, locus q31-33, mutation W1282x) (1).

Disease no 2: Familial dysautonomia (Riley-Day syndrome) (chromosome 9, locus
q31-33) (2).

Disease no 3: Familial Mediterranean fever (chromosome 7 + 9 =16) (3).

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