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Original article

Analgesic requirements for appendicectomy: the differences between adults and children

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***Aim*: The analgesia provided for children is often less than for adults with the same underlying pathology. This paper attempts to quantify the postoperative analgesic requirements of patients undergoing appendicectomy.**

***Methods*: Patients between 6 and 30 years of age who underwent an unscheduled appendicectomy were prospectively recruited. Regular non-opiate analgesia, calculated according to weight, was administered. Hourly visual analogue pain scores and morphine patient controlled analgesia (mPCA) usage were recorded for 24 h following surgery.**

***Results*: 19 children (6–16 years) and 23 adults (17–30 years) were recruited. There was no significant difference in the pain scores following appendicectomy between the two groups. Significantly more mPCA was demanded ($t = 2.02$, $P < 0.02$) and morphine received ($t = 2.02$, $P < 0.005$) by adults than children following appendicectomy.**

***Conclusion*: Children appear to require and do demand less analgesia than adults following appendicectomy to maintain similar postoperative pain scores. Acceptable pain scores may be achieved by the administration of regular analgesia to these patients.**

Key words: Analgesia – Appendicitis – Adult – Child

Little is known about the analgesic requirement of patients following appendicectomy. The introduction of guidelines has been shown to increase the administration of medication to patients with appendicitis but significant differences remain between children and adults.[1] This paper investigates post-appendicectomy pain in two groups of patients by means of visual analogue pain scores and morphine requirement, determined by mPCA usage.

Patients and Methods

Two groups of patients who underwent unscheduled appendicectomy within 18 h of admission were prospectively studied. Group A were aged between 6 and 16 years (children) and group B, 17 and 30 years of age (adult). Exclusion criteria are shown in Table 1. Following the diagnosis of appendicitis, patients received intravenous opiate analgesia (Table 2) and

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Table 1 Study exclusion criteria

Asthmatics
Known renal impairment
Learning difficulties/mental handicap
Protocol drug allergy
Inability to use a PCA
Non-English speakers
Patients not having a right iliac fossa incision
Collaborators not available to implement protocol

Table 2 Pre-operative pain protocol

Analgesia
Intravenous morphine 0.1 mg/kg at initial diagnosis
Boluses of 20 mcg/kg until pain score 1
Repeat to maintain adequate analgesia

intravenous fluids as clinically indicated until surgery. A standardised anaesthetic was administered which included rectal paracetomol (15 mg/kg) and diclofenac (1.5 mg/kg) following induction. Appendicectomy through a right iliac fossa incision was performed. Postoperatively, regular oral or rectal paracetomol (6 hourly) and diclofenac (12 hourly) were administered in the same doses. In addition, all patients received mPCA (20 mcg/kg bolus with 5 min lockout). An intravenous infusion was continued according to the clinical condition until oral fluids were tolerated.

From the time of arrival in the recovery area until 24 h postoperatively, hourly pain scores from 0 (no pain) to 3 (severe pain) were obtained from a visual analogue scale for adults and facial characteristics for children. During the same period, the patient's use of the PCA was recorded.

Results

Nineteen children and 23 adults were recruited into the study. There was no significant difference in the pain scores of children or adults during the 24 h following appendicectomy, with a mean score of 0.6/3 (range 0.39–1.05). During the study period, adults demanded and received significantly more morphine than children (Table 3). Three patients required an anti-emetic following surgery, but there were no instances of oversedation.

Table 3 The use of the patient controlled analgesia

	Adult	Child	*t*-test
Attempts	98	36	$t = 2.02$, $P < 0.02$
Doses	46	24	$t = 2.02$, $P < 0.005$

Discussion

The provision of postoperative pain relief is often inadequate despite our improved understanding of the physiology and our multidisciplinary approach to pain.[2] The introduction of guidelines has been shown to increase the administration of medication to patients following appendicectomy, but a significant difference remains between that given to adults and children,[1] despite the lack of data for children requiring less. There is evidence that regular non-steroidal anti-inflammatory drugs reduce the opiate requirement of children following appendicectomy.[3] The use of PCA is well established for adults and has been shown to be safe when used in the paediatric population.[4] Despite this, there remains wide variation in the types of analgesia prescribed for appendicectomy, particularly in children.[5]

This study has shown that average pain scores of 0.6/3 can be achieved in the first 24 h following appendicectomy in these two patient groups. Importantly, we have demonstrated by pain scoring and mPCA analysis that children demand and receive significantly less opiate analgesia than adults, above the regular non-opiate analgesia administered, following appendicectomy.

We believe that regular diclofenac and paracetomol should be administered to all patients who undergo appendicectomy, which can be supplemented by additional opiate analgesia as clinically indicated.

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