

Journal Meeting

R1 李岱穎
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ORIGINAL ARTICLE

Pediatric Procedural Sedation With Propofol Using a Higher Initial Bolus Dose

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背景

- 目前急診最常見用做兒童鎮定劑的propofol劑量為 Miner and Burton 在2007年提出的1 mg/kg 作為一開始的bolus dose
 - 此劑量下，兒童有氧氣濃度低於90%的比率為5-7% Apea的比率為0.8-1%
- 在Loma Linda University Children's Hospital，通常會使用到2 mg/kg

研究目的

- 研究各種propofol起始劑量與總藥量使用後，臨床醫師的對於各種兒童檢查的滿意程度，和兒童接受鎮定劑後可能產生的各種危害。



方法

- January 1, 2004, to January 31, 2009
 - 團隊: 9位full-time兒童急診醫師和數位part-time兒童急診醫師來執行propofol sedation，另含一位 monitoring nurse以及一位respiratory therapist
 - 評估: 除了基本資料、每次藥物濃度與流速紀錄外，若有desaturation/hypoxia, apnea, nausea, vomiting, hypotension, and bradycardia發生，會再紀錄lowest pulse oximetry reading, systolic blood pressure, or heart rate (Pediatric Advanced Life Support definition)
 - 由執行者最後評估滿意程度

結果

total 853 unique participants

TABLE 1. Descriptive Characteristics for Propofol Sedation Events (n = 886)

Age, y*	4.9 (IQR, 2.1–10.8; range, 0.1–19.3)
Weight, kg*	19 (IQR, 13–40; range, 3.9–127)
Sex (male), n (%)	529 (59.7)
ASA score, n (%)	
1	775 (87.5)
2	95 (10.7)
3	15 (1.7)
4	1 (0.1)
5	0 (0)
Other medications used, n (%)	408 (46.0)
Opiates	352 (39.7)
Benzodiazepine	12 (1.4)
Intravenous lidocaine	17 (1.9)
Ketamine	19 (2.1)
Diphenhydramine	5 (0.6)
Other	3 (0.3)

*Reported as median value.

ASA indicates American Society of Anesthesiologists.

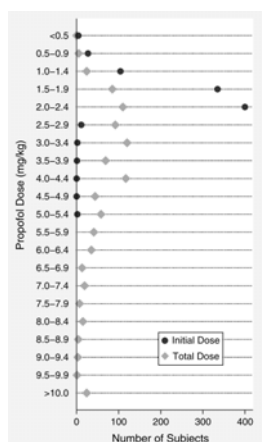


TABLE 2. Indications for Sedation With Propofol (n = 905*)

Fracture reduction	214 (23.6)
Computed tomography scan	178 (19.7)
Incision and drainage	105 (11.6)
Laceration repair	79 (8.7)
Foreign body removal	52 (5.7)
Ophthalmologic examination	38 (4.2)
Lumbar puncture	37 (4.1)
Dislocation reduction	31 (3.4)
Endoscopy/esophageal foreign body removal	21 (2.3)
Tooth extraction/dental procedure	19 (2.1)
Hernia reduction	10 (1.1)
Casting/splinting without reduction	8 (0.9)
Orthopedic pinning	8 (0.9)
Arthrocentesis/joint aspiration	7 (0.8)
Chest tube placement	7 (0.8)
Disimpaction	7 (0.8)
Wound repacking	7 (0.8)
Gynecological examination	5 (0.6)
Reduction of prolapsed rectum	5 (0.6)
Pneumothorax reduction	4 (0.4)
Circumcise tube placement	3 (0.3)
Emergent ventriculostomy	3 (0.3)
Gastrostomy tube replacement	3 (0.3)
Painful joint manipulation	3 (0.3)
Urinary catheterization	3 (0.3)
Amputation irrigation	2 (0.2)
Fingertip repair	2 (0.2)
Lateral canthotomy	2 (0.2)
Needle aspiration of neck mass	2 (0.2)
Needle drainage of peritonsillar abscess	2 (0.2)
Penis (not) hematoma evacuation	2 (0.2)
Tonsil removal	2 (0.2)
Ultrasound	2 (0.2)
Wound dehiscence repair	2 (0.2)
Other	30 (3.3)

*Values are presented as n (%).
*Seventeen children had multiple indications for sedation (ie, computed tomography and lumbar puncture) for a total of 905 indications for 886 sedation events. Two children had 3 indications for sedation.

TABLE 3. Outcome Measures for Children Receiving Propofol for Sedation (n = 886)

Physiologic changes, n (%)	204 (23.0)
Any desaturation/hypoxia	135 (15.2)
Desaturation <90%	64 (7.2)
Hypotension*	17 (1.9)
Agitation/thrashing	16 (1.8)
Monitor indicated unconfirmable problem	12 (1.4)
Bradycardia†	9 (1.0)
Pain at intravenous site	5 (0.6)
Apnea	3 (0.3)
Cough	2 (0.2)
Sedation inadequate	2 (0.2)
Bradypnea	1 (0.1)
Nausea, no vomiting	1 (0.1)
Vomiting	1 (0.1)
Interventions for physiologic changes,‡ n (%), % total	130 (14.7)
Jaw thrust/chin lift	82 (63.1, 9.2)
Oxygen applied only	34 (26.2, 3.8)
Bag-valve-mask ventilation	6 (4.6, 0.7)
Spontaneously resolved	5 (3.8, 0.6)
Oxygen and suction	1 (0.8, 0.1)
Shoulder roll	1 (0.8, 0.1)
Increase oxygen	1 (0.8, 0.1)

median total dose : 3.6 mg/kg

TABLE 4. Physician Response to the Question, "What Would You Do Differently in the Future?"

Nothing	604 (68.2)
No answer	187 (21.1)
Use a different drug	27 (3.0)
Give larger initial dose	17 (1.9)
Give drip or titrate better	12 (1.4)
Give oxygen during procedure	7 (0.8)
Add an analgesic	5 (0.6)
Give analgesic closer to propofol administration	2 (0.2)
Decrease total dose given	2 (0.2)
Give the injection faster	2 (0.2)
Give benzodiazepine to agitated patient before propofol	1 (0.1)
Have enough drug at the bedside for a second dose	1 (0.1)
Other	19 (2.1)

Values are presented as n (%).

median satisfaction score was 97 (IQR, 88, 99)

結論

- 此篇研究提出較高的propofol劑量，並沒有提高有害事件的比率
- 對Physicians而言，本篇研究認為使用高劑量propofol的滿意度不低

→ 2 mg/kg propofol as starting dose for bolus sedation!



討論

- 這類研究必須仰賴執行者的紀錄與回報，當中有可能會有缺漏或是recall bias
- 此研究中，propofol的執行過程，並沒有一定的guidelines提供醫師們去遵守，所以對於流速等藥劑的使用方式不一
- 雖然單看數字結論，和較低劑量的propofol使用似乎沒有太大差異，但此研究並沒有限制變因來和前人的研究做比較，因此這些數據亦無法直接做有信度的比較
- 本篇研究提出，使用2 mg/kg 可是應付大部分需要鎮定的檢查，但詳細與低劑量的比較，仍需後續的研究設計與資料收集

ORIGINAL ARTICLE

Clinical Signs and Symptoms Associated With Intussusception in Young Children Undergoing Ultrasound in the Emergency Room

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背景

- 腸套疊為三個月到六歲大的小孩常見的腸阻塞原因
→其中有80%發生在24個月大以前

- 雖然有些腸套疊會自己恢復，但是若是不接受治療，血管的壓迫和腸壁的腫脹可能會...



- 常見症狀: 嘔吐、直腸出血、腹部可觸摸到的腫塊
→前人的研究顯示這些也只佔了25%

研究目的

- 已有許多過去的研究使用air contrast enema來診斷腸套疊，但這些研究都顯示使用enema的診斷準確程度有時還不如症狀診斷(rectal bleeding)



- 這篇研究對每個懷疑腸套疊的患者都使用超音波來評估，比較症狀和腸套疊的相關度，以求找出高診斷度的症狀

方法

- From January 1, 2006, to December 31, 2010
- Retrospective chart review
- Emergency department of Women and Children's Hospital of Buffalo

- 533 charts
- 排除外院確診轉院、有trauma history、先前有腸套疊history、先前有腹部重大手術、先前necrotizing enterocolitis、有腹腔內腫瘤病史、或是出生是小於32週的早產兒

結果

TABLE 1. Demographic Characteristics for all Charts Reviewed

Demographic Variable	Charts	% of Patients
Average age, mo	452	21.5 (SD, 16.5)
Sex (n, % female)	452	196 (43)
History of previous illness (n, %)	452	69 (19)
Average duration of symptoms, h	452	65.4
Range		1–1440
Vomiting	451	53
Bilious vomiting	122	10
Diarrhea	451	35
Abdominal pain	342	78
Crying	383	67
History of bloody stool	382	20
Poor oral intake	382	59
History of seizure	200	3
History of syncope	173	1
Fever	448	31
Pallor on examination	347	7
Altered mental status	446	2
Lethargy	446	12
Abdominal mass on examination	344	8
Abdominal distention on examination	401	11
Gross blood on rectal examination	110	16
Occult blood on rectal examination	64	48
Decreased tone on examination	396	2

553 patients who had an ultrasound performed to evaluate for intussusception, of which 101 patients were excluded, resulting in a total sample size of 452

Diagnosis of Patients Undergoing Ultrasound for Possible Intussusception

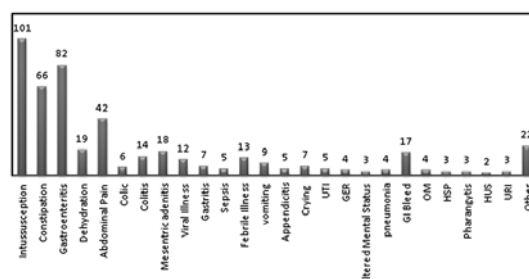


TABLE 2. Associated Symptoms for Patients Undergoing Ultrasound to Evaluate for Intussusception

Symptoms	% of Patients With Intussusception	% of Patients Without Intussusception	χ^2	P
Vomiting*	76	47	27.2	<0.001
Bilious vomiting	14	8	1.1	0.29
Diarrhea	35	35	0.008	0.928
Abdominal pain	87	75	4.7	0.095
Crying/fussiness *	87	60	21.4	<0.001
History of bloody stool	29	17	5.1	0.024
History of poor PO intake	73	56	7.5	0.006
History of seizure	2	3	0.13	0.721
History of syncope	0	<1	0.4	0.523
Fever	24	33	2.8	0.095
Pallor*	15	4	12.6	<0.001
Altered mental status	2	2	0.04	0.847
Lethargy	21	10	9.6	0.002
Abdominal mass*	23	3	31.8	<0.001
Abdominal distention	20	8	12.3	<0.001
Gross blood in rectum on examination	26	12	3.0	0.083
Occult blood in rectum	83	40	7.2	0.007
Decreased tone on examination	3	<1	2.7	0.099

*Only crying, pallor, abdominal mass, and vomiting remained significantly associated with intussusception in the final logistic regression model.
P < 0.1 indicates correlation for intussusception which were used in logistic regression to determine independent predictors of intussusception.
PO indicates oral.

結論

• 這篇研究指出若是同時擁有以下四個症狀，即有高達95%的可能為腸套疊：

crying, abdominal mass, pallor, and vomiting

→ 若是四個症狀通通都沒有，那腸套疊的可能性只有1.6%



結論

- Kuppermann et al：在高度懷疑的案例，使用contrast enema來診斷(59% positive diagnosis rate)
 - 男性、X光表現、Rectal bleeding為陽性predictors
 - too late!!!!
- Harrington et al：使用contrast enema來診斷
 - the triad of abdominal pain, vomiting, and right upper abdominal mass為陽性predictors
 - Small sample size(n=88)

結論

- Wehmler et al: 收集320可能為腸套疊的各案，使用contrast enema和echo來診斷
 - X-ray擁有96%的negative predictive value
 - Small sample size(其中腸套疊各案僅38例)

討論

- 相較其他研究，常見lethargyc和rectal bleeding的表現，而本篇卻無顯示二症狀和診斷腸套疊的相關，可能是由於早期使用超音波來診斷，患者不會有機會表現出此二晚期症狀
- 當症狀如蒼白、腹部腫塊、嘔吐、哭泣不存在時，並無法幫助我們去排除腸套疊，但根據此篇研究，可以提供我們如果這些症狀用不同方式組合時，有以下的機率性為腸套疊...

TABLE 3. Probability of Diagnosing Intussusception With Each Combination of Variables Present at the Time of Diagnosis

Probability of Diagnosis	% Probability
None	1.6
Mass	21
Pallor	9.8
Vomit	4.9
Crying	5.2
Mass and pallor	63
Mass and vomit	45
Mass and crying	47
Pallor and vomit	25
Pallor and crying	27
Vomit and crying	15
Mass, pallor, vomit	84
Mass, pallor, crying	85
Mass, vomit, crying	73
Pallor, vomit, crying	52
Mass, pallor, vomit, crying	95

Probability = $1/1 + e^{-(4.090 + 1.198(\text{crying}) + 1.871(\text{pallor}) + 2.756(\text{mass}) + 1.121(\text{vomiting}))}$; where for all variables 1 = pos and 0 = negative.