

Abstracts - posterkonkurrence DASAIMs Årsmøde 2015

Postersession VI

Abstract 6

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Overskrift Fedme, alkohol og rygningens betydning for postoperativ infektionsrisiko efter ankelfrakturkirurgi – en analyse af 1043 patientforløb

Introduktion

Ryging og alkohol er kendte risikofaktorer for postoperative komplikationer. Fedme muligvis ligeså, men evidensen er begrænset [1-2] Det meste nuværende viden er baseret på elektiv kirurgi, men akut kirurgi medfører øget risiko for bl.a. postoperative infektioner. Ankelfrakturkirurgi er et hyppigt akut indgreb, hvor infektion kan have alvorlige følger som reoperation og endog amputation. Formålet med studiet er at undersøge hvorvidt fedme, alkoholoverforbrug og rygning har indflydelse på risikoen for at udvikle infektion efter ankelfrakturkirurgi.

Metode

Retrospektivt gennemgik vi alle ankelfraktur operationer på Herlev Hospital fra 01.01.2008 til 31.12.2013. Vi ekskluderede patienter som primært blev behandlet med andet end intern fikstion eller som ikke gennemførte det ambulante kontrolforløb. Vi registrerede demografiske, kirurgiske og postoperative data med fokus på infektioner. Dyb infektion blev defineret som reoperation på indikationen infektion indenfor opfølgningstiden på mindst et år. Sårinfektion blev defineret bredere som opstart af antibiotika indenfor 30 dage på indikation af sårinfektion eller forekomst af dyb infektion som defineret. Vi testede for sammenhæng med rygning (Ja/Nej), fedme (BMI \geq 30) eller alkoholoverforbrug (over 7 / 14 genstande for hhv. kvinder og mænd) samt potentielle confoundere i form af køn, alder, ASA klasse, frakturtype og diabetes. Data blev analyseret med en univariabel model og signifikante resultater blev medtaget i multivariabel regressionsanalyse.

Resultater

Vi inkluderede 1043 patienter. Analyseresultaterne ses i Tabel 1 og 2. BMI \geq 30 var associeret med en øget risiko for både dyb infektion (OR 2,21 [1,19;4,11]) og sårinfektion (OR 1,89 [1,22;2,93]) efter justering for de øvrige betydende faktorer. Alkoholoverforbrug var forbundet med øget risiko for dyb infektion og sårinfektion, men kun i den univariable analyse. Vi kunne ikke vise sammenhæng mellem rygning og risikoen for postoperativ infektion. Alder, diabetes og ASA klasse var forbundet med øget risiko.

Diskussion

I modsætning til tidligere studier fandt vi at fedme var en risikofaktor for både dyb infektion og sårinfektion efter kirurgi for ankelfraktur. Grænsen for alkoholoverforbrug var defineret lavt, hvilket måske kan forklare, at det kun var en risikofaktor i den ukorrigerede analyse. Mod forventning ud fra tidligere studier var rygning ikke en risikofaktor. En styrke ved dette studie er det store antal patienter sammenlignet med tidligere undersøgelser. En svaghed er det retrospektive design og dermed unøjagtighed af visse data.

Konklusion

BMI \geq 30 øger risikoen for dyb infektion og sårinfektion efter ankelfrakturkirurgi. Alkoholoverforbrug er ligeledes associeret med øget risiko, men kun i ukorrigerede analyser. Risikoen for infektion var ikke forhøjet blandt rygere i dette studie.

1. Møller AM et. al. Lancet. 2002 Jan;359(9301):114-7.
2. Eliassen M et. al. Ann Surg. 2013 Dec;258(6):930-42.

Tabel 1 Dyb Infektion

Variabel ¹	Niveau	Antal dybe infektioner (%)	Univariabel model			Endelig multivariabel model ²		
			OR	CI95	p	OR	CI95	p
BMI	BMI<30	39 (5,0)	Ref.					
	BMI \geq 30	17 (10,4)	2,21	[1,19;3,97]	0,0078* (c)	2,21	[1,19;4,11]	0,0168* (LRT)
Diabetes	No	56 (5,7)	Ref.					
	Yes	8 (15,7)	3,10	[1,20;7,11]	0,0100* (f)	2,72	[1,16;6,36]	0,0324* (LRT)
Alkohol	No	42 (5,4)	Ref.					
	Yes	22 (9,1)	1,77	[1,01;3,00]	0,0368* (c)			
Ryging	No	43 (5,7)	ref.					
	Yes	21 (7,4)	1,33	[0,76;2,26]	0,31 (c)			
ASA	I	13 (2,9)	Ref.		<0,0001* (c)			
	II	26 (6,6)	2,31	[1,19;4,73]	0,0012* (c)			
	III+IV	15 (17,1)	6,78	[3,07;15,15]	<0,0001* (c)			
Alder	Pr. år	-	1,03	[1,01;1,04]	0,0002* (w)	1,03	[1,01;1,05]	<0,0001* (LRT)
Total		64 (6,1)						

Ref. = referencegruppe, * = p<0,05, OR = Odds ratio, CI95 = 95% konfidensinterval, (c) = beregnet med Chi²-test,

(f) = beregnet med Fishers-test, (w) = beregnet med Wald-test, (LRT) = beregnet med Likelihood Ratio-test,

¹ = insignifikante resultater for køn, og frakturtype ikke vist, ² = Alle insignifikante led elimineret med " backwards elimination"

Tabel 2 Sårinfektioner

Variabel ¹	Niveau	Antal sårinfektioner (%)	Univarabel model			Endelig multivarabel model ²		
			OR	CI95	p	OR	CI95	p
BMI	BMI<30	111 (14,2)	Ref.					
	BMI≥30	39 (23,8)	1,89	[1,24;2,84]	0,0022* (c)	1,89	[1,22;2,93]	0,0055* (LRT)
Diabetes	No	149 (15,0)	Ref.					
	Yes	15 (29,4)	2,37	[1,23;4,37]	0,0059* (c)			
Alkohol (%)	No	111 (14,1)	Ref.					
	Yes	51 (21,0)	1,61	[1,11;2,32]	0,0105* (c)			
Rygning (%)	No	118 (15,7)	Ref.					
	Yes	45 (15,9)	1,02	[0,69;1,47]	0,93 (c)			
ASA	I	36 (8,19)	Ref.					0,0023* (LRT)
	II	78 (19,7)	2,77	[1,83;4,26]	<0,0001* (c)	1,86	[1,15;2,99]	0,0108* (w)
	III+IV	31 (35,2)	6,15	[3,52;10,75]	<0,0001* (c)	3,13	[1,62;6,05]	0,0007* (w)
Fraktur type	Lateral	57 (14,3)	Ref.					
	Medial	3 (4,9)	0,31	[0,06;1,00]	0,0418* (f)			
	Bi	70 (18,7)	1,38	[0,92;2,06]	0,12 (f)			
	Tri	34 (16,2)	1,16	[0,70;1,87]	0,55 (f)			
Alder	Pr. år	-	1,03	[1,02;1,04]	<0,0001* (w)	1,02	[1,01;1,03]	0,0008* (LRT)
Total		164 (15,7)						

Ref. = referencegruppe, * = p<0,05, OR = Odds ratio, CI95 = 95% konfidensinterval, (c) = beregnet med Chi2-test, (f) = beregnet med Fishers-test, (w) = beregnet med Wald-test, (LRT) = beregnet med Likelihood Ratio-test, ¹ = insignifikante resultat for køn ikke vist, ² = Alle insignifikante led elimineret med " backwards elimination"

Abstract R

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Overskrift

Forudsigtelse af behandlingskrævende blodtryksfald ved bedøvelse. En eksplorativ pilotundersøgelse

Introduktion

Diabetikere har en øget perioperativ morbiditet og mortalitet. Diabetisk autonom neuropati (DAN) er en hyppig komplikation til diabetes mellitus type 1 og 2, der bl.a. påvirker det kardiovaskulære systems tilpasningsevne under anæstesi 1). Hypotension under anæstesi kan medføre kritisk iskæmi i vitale organer som hjerte og hjerne, og det er sandsynligt at den forøgede mortalitet blandt diabetikere bl.a. har baggrund i et kompromitteret kredsløb som følge af DAN. Formålet med studiet er at forudsige behandlingskrævende blodtryksfald ved hjælp af præoperative undersøgelser for DAN.

Metode

Tilstedeværelse af DAN kan påvises vha. hjertefrekvens analyse under bl.a. vejtrækningsøvelser og stillingsændringer 2). I et dobbeltblindet observationelt tværsnitsstudie rekrutterer vi diabetikere, der skal bedøves elektivt i generel eller spinal anæstesi.

Diabetes type, varighed, medicinliste og evt. senkomplikationer registreres. Herefter udføres tests for DAN: Hjerterytme variabilitet (HRV) under hvile i 5 min (HRV-5), ved stillingsændring fra liggende til stående, under kontrolleret expiration og inspiration samt under Val-salva-manøvre. Patientens blodtryk måles endvidere noninvasivt på begge arme.

Resultater

Vi præsenterer hér data (mean±sd) fra 26 patienter med diabetes, heraf 22 med type 2 diabetes. Gennemsnitlig alder og BMI var hhv. 62±9 år og 31±6 kg/m². Alle patienter blev opereret i generel anæstesi, heraf 14 med propofol og remifentanyl som eneste anæstesiimidler. De foreløbige analyser viser, at HRV-5 er associeret til blodtryksfaldet ved anæstesiindledning. Vi har hér set på blodtryk fra indgift af induktionsbolus og 10 minutter frem. Lineær regressionsanalyse viste, at en lavere HRV-5 var associeret til et større blodtryksfald (P=0.01). Det lavest registrerede middel blodtryk (MAP) opdelt på lav, mellem og høj HRV (i tertiler) var hhv. 58±18, 60±9, 71±14 mmHg. Endvidere havde patienter med blodtryksfald til under MAP 60 mmHg en tendens til lavere HRV-5 end de øvrige patienter (P=0.06).

Diskussion

De foreløbige resultater tyder på, at man med simple præoperative tests kan forudsige, hvilke patienter der udvikler kritisk blodtryksfald under anæstesi. Der er pr. 01/08 2015 inkluderet 45 af 150 deltagere. Vi har endnu ikke data nok til at kunne afklare, hvorvidt viden om den autonome nervefunktion kan anvendes klinisk til at risikostratificere diabetes patienter og dermed facilitere planlægning af anæstesi måde og monitoreringsniveau til patienter i særlig risiko for kritisk blodtryksfald.

Konklusion

De foreløbige resultater viser, at præoperative målinger af HRV kan øge vores viden om det kardiovaskulære systems tilpasningsevne under anæstesi.

1) Huang et al. Acta Anesthesiol Scand 542-548 (2006)

2) Vinik et al. Diabetes Care 26, 1553-1579 (2003)

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Overskrift Præoperativ forberedelse af børn til elektive kirurgiske procedurer reducerer angst.

Introduktion

Hospitalsindlæggelser kan udløse angst hos børn. I undersøgelser gælder det for 50-75 %, og det er dokumenteret, at børn kan få adfærdsforstyrrelser to uger før og til en måned efter operation. Især anæstesiinduktionen, kan være traumatiserende, da børn er påvirkelige over for stress grundet begrænset kognitiv kapacitet og afhængighed af voksne.

Metode

Et systematisk review, hvor der er lavet litteratursøgning på databaserne; Pubmed, Embase og Cochrane med kombinerede MESH termer og fritekst. Første søgning gav 125 hits. Efterfølgende selektering samt gennemlæsning af abstracts og fuldttekst medførte at 13 artikler; 8 randomiserede kliniske studier (RCT), 2 deskriptive studier, 1 kvalitativt studie og 2 reviews, opfyldte kriterierne, at artiklerne var omhandlende pædiatriske patienter til elektiv kirurgi, clinical trials med en intervention og kontrol eller reviews.

Resultater

De tre største studier har vist følgende:

Felder-Puig et al, RCT, 400 børn i alderen 2-10 år, 160 i interventionsgr., 240 i kontrolgr. Studiet undersøgte standard forberedelse versus brug af en særlig børnebog. Forældre vurderede eget og barnets angstniveau ved brug af State Trait Anxiety Inventory (STAI). Interventionsgr. havde signifikant færre angste, irritable, hjælpeløse børn.

Li et al, RCT, 203 børn i alderen 7-12 år. 97 i interventionsgr., 106 i kontrolgr. Effekt af terapeutisk legeintervention og øget forældreinvolvering målt ved State Anxiety Scale Children (CSAS-C), Children's Emotional Manifestation Scale (CEMS), State Anxiety Scale Adults (CSAS-A), puls og middelarterietryk. Konklusion: signifikant reduktion i præ- og postoperativ angst hos interventionsgr.

Fortier et al, deskriptivt studie, 143 ASA 1+2 børn i alderen 7-17 år. Børnene besvarede spørgeskemaet Children's Desire for Information og selvrapporterede deres angst vha. STAI-Children. Forældrene scorede børnene ud fra Emotionality, Activity, Sociability og Impulsivity (EASI). Konklusion: børn ønsker information omkring en fremtidig operation. De mest nervøse børn ønsker især information om smerter.

De øvrige studier viser tilsvarende resultater.

Diskussion

Førskolebørn forberedes max 2 dage før operation, og har størst udbytte af terapeutisk leg. Skolebørn har størst udbytte af en rundvisning på operationsgangen samt udlevering af alderssvarende materiale ca. en uge før operation. Studierne har forskellige designs og vurderingsværktøjer, hvorfor det ikke er muligt med en regelret meta-analyse.

Konklusion

Børns præ- og postoperative angst kan mindskes vha. et alderskorrigeret forberedelsesprogram. Der er behov for at lave flere større og sammenlignelige studier. Der findes ingen danske studier, der belyser denne problemstilling. Visionen er at lave et nationalt anæstesi-forberedelsesprogram i samarbejde med Dansk Institut for Medicinsk Simulation.

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Afdeling Gastroenheden D

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Overskrift The Simplified Airway Risk Index as a Predictor of Airway Management During Deep Sedation with Propofol for Gastrointestinal Endoscopy. A feasibility study.

INTRODUCTION

Upper airway obstruction is an unwanted condition during deep sedation, particularly in the hands of gastroenterologists. This study aimed to evaluate the use of a modified Simplified Airway Risk Index (mSARI) and the Mallampati (MP) score as a predictor of respiratory events during deep sedation with propofol for gastrointestinal endoscopy.

The MP score is not routinely used in the screening of Obstructive Sleep Disorder (OSA), but several authors' report of a correlation between high MP and the risk of having OSA (1). Despite showing mediocre inter-rater agreement when established by a gastroenterologist (2), a high MP or SARI score is often used as exclusion criteria for receiving sedation due to the risk of a difficult intubation if needed, but the risk of an obstructed airway is less commonly mentioned despite the proposed predisposition to OSA.

mSARI is routinely used in our endoscopy unit. Known OSA and a high mSARI are exclusion criterias for receiving Nurse Administered Propofol Sedation (NAPS). The aim of this study was to investigate the feasibility of the mSARI and MP as predictors for airway handling and hypoxia during deep sedation for gastrointestinal endoscopy.

METHODS

Local Dataprotection Agency j.nr.: 2012-58-0004

Ethical committee ref: H-4-2013-171

A retrospective study of patients sedated with propofol for gastrointestinal endoscopy. Data were: MP score, atlanto-occipital movement, thyromental distance, mouth opening and a combined score of the above (mSARI). Events were defined as the use of supplemental oxygen, airway devices and oxygen desaturation < 92%. Baseline data was obtained for comparison. Independent samples T-test was used for de-

scriptives and binary logistic regression for Odds Ratios and sensitivity analysis.

RESULTS

8336 patients with airway scores were identified. The occurrence of events was correlated with a significant higher mSARI and higher MP score ($P < 0.05$) (Table 1.). The risk analysis showed a significant association between increasing mSARI and MP score and the occurrence of an event ($P < 0.05$) (Figure 1). With a MP > 1 sensitivity was 68.6% and specificity was 47.7% and with a mSARI > 0 sensitivity was 49.0% and specificity was 72.0%.

DISCUSSION

We found a positive correlation between most point increases in the mSARI- and MP- score and the occurrence of the defined events. However, the results are prone to poor inter-rater reliability of the scores and confounding. Furthermore, as expected from similar studies on difficult intubation (3), the sensitivity and specificity were mediocre to poor. On the other hand, the application of the score is almost free and can possibly increase the level of preparedness prior to sedation.

CONCLUSION

A higher MP score and mSARI score is associated with the use of supplemental oxygen, airway devices, and development of hypoxia. The MP provides higher sensitivity and mSARI a higher specificity.

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Overskrift Why do Danish anesthetists not perform neuromuscular monitoring routinely? A qualitative study

Introduction

We have found that patients with butyrylcholinesterase deficiency experienced awareness during emergence if neuromuscular monitoring was not applied before awakening (1). Nevertheless, clinicians may refrain from monitoring the neuromuscular blockade when using short acting neuromuscular blocking agents. We investigated the reasons for applying or not applying neuromuscular monitoring routinely when administering succinylcholine.

Methods

This qualitative, non-interventional study was registered at clinicaltrials.gov (NCT02239965). No approval from The Ethics Committee was needed. The use of neuromuscular monitoring during anesthesia was observed in the operating theatres. One investigator performed all observations and recorded data in an observation guide. After induction of anesthesia, the anesthetist was interviewed about the use of neuromuscular monitoring, both in the case observed and in general. Observations and interviews were continued until saturation in data was reached. The reasons given by each anesthetist for applying or not applying neuromuscular monitoring were analyzed using a phenomenological approach. Data were analyzed in NVivo.

Results

A total of 28 cases were observed at 8 teaching hospitals in September 2014 and March 2015. A nerve stimulator was integrated in the anesthesia machine in all institutions. The majority of anesthetists interviewed did not routinely apply neuromuscular monitoring when using succinylcholine only. However, especially residents and recently specialized nurse anesthetists reported always using a nerve stimulator. Examples of the reasons given for applying or not applying neuromuscular monitoring when administering succinylcholine are listed in the table. Several anesthetists stated that they always apply neuromuscular monitoring before administering a non-depolarizing neuromuscular blocking agent, though not using a nerve stimulator when administering succinylcholine. The phenomenological analysis resulted in the following themes that may influence an anesthetist's decision of whether to apply neuromuscular monitoring or not:

- Personal view on the clinical relevance of cholinesterase deficiency
- Influence from colleagues
- Common practice at work place and former work places
- Personal experience with patients with cholinesterase deficiency
- Prioritizing other tasks over neuromuscular monitoring
- Personal view on the validity and stability of the nerve stimulator

Conclusion

Even though neuromuscular monitoring was available in all operating theatres, the equipment was not routinely applied when administering succinylcholine. The choice of whether or not to monitor the neuromuscular block seems to be based on personal opinion, previous experience with cholinesterase deficiency, different views on the significance of cholinesterase deficiency, and what is routine practice at the particular department.

References

1. Br J Anaesth 2015; 115 Suppl 1:i78-i88

Table
Reasons for applying or not applying neuromuscular monitoring routinely when administering succinylcholine

Does not apply neuromuscular monitoring	Applies neuromuscular monitoring
Cholinesterase deficiency is so rare	It is 'free': it is inexpensive, does not harm the patient, and may be beneficial
No time to apply neuromuscular monitoring in rapid sequence induction	You never know if the patient is the one in thousands with cholinesterase deficiency
Not necessary	I use a nerve stimulator if the patient has not received succinylcholine before
Do not use it, but I know I should	Monitoring is mandatory in my department
Patients with cholinesterase deficiency know they are affected because it is genetically inherited	I have experienced awakening a patient with apnea lasting 3 hours after succinylcholine administration
No one does it here	I was a resident at a hospital where they did research in cholinesterase deficiency
A patient with cholinesterase deficiency does not experience being awakened because he is re-sedated when the condition is recognized	
The nerve stimulator is always malfunctioning	
Working 30 years as anesthesiologist I have never seen a patient with cholinesterase deficiency	

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Overskrift Importance of deep neuromuscular blockade in laparoscopic surgery

Background

Unexpected abdominal contractions may occur during laparoscopic procedures. Use of deep neuromuscular blockade (NMB) has the potential to prevent such episodes. In this study we aimed at investigating if administration of deep NMB as compared to moderate NMB reduced the incidence of sudden abdominal contractions.

Methods

The Danish Medicines Agency and the Regional Ethics Committee, the Capital Region of Denmark approved this study (NCT01722097). This was a secondary analysis of a randomised, controlled study. A total of 110 patients scheduled for laparoscopic hysterectomy were randomised to either deep NMB and 8 mmHg pneumoperitoneum (deep NMB group) or moderate NMB and 12 mmHg pneumoperitoneum (moderate NMB group). NMB was established with rocuronium and reversed with sugammadex. Two gynaecologists registered sudden abdominal, alarms from the insufflator due to sudden increased intra-abdominal pressure, and incidences where the abdominal wall felt tight. At closure of the abdominal wall fascia, surgical conditions were evaluated on a four-point rating scale. Adverse events were registered.

Results

In deep NMB group no sudden abdominal contractions were detected as compared to 12 incidences in the moderate NMB group ($P < 0.001$) (Absolute risk reduction 0.22 (95% Confidence interval 0.11-0.34)) (Table 1). The insufflator alarmed in 0 vs. 10 cases ($P = 0.001$) in the deep and moderate NMB group, respectively. The gynaecologists registered increasing abdominal tensions in 0 vs. 8 patients ($P = 0.006$) in the deep and moderate NMB group, respectively. Deep NMB improved surgical conditions while suturing the abdominal fascia ($P < 0.001$) (Table 2). We registered adverse events in 7 patients: Three with infection (two in the deep NMB group), one with lesion of the bladder (deep NMB group), one with vesico-vaginal fistula (moderate NMB group) and one with postoperative bleeding (moderate NMB group). One patient (deep NMB group) had a hematoma and infection, and developed a vesico-vaginal fistula postoperatively.

Discussion

Establishment of a steady operating field is pertinent especially during morcellation in laparoscopic hysterectomies. However, establishment of deep NMB was not able to prevent adverse events.

Conclusion

No abdominal contractions were registered if deep NMB was used during laparoscopic hysterectomy. Moreover, deep NMB improved surgical conditions while suturing the abdominal fascia.

Table 1 Abdominal contractions during laparoscopy

	Deep NMB group n = 55	Moderate NMB group n = 55	Absolute risk reduction (95% confidence interval)	P-value*
Sudden abdominal contractions	0 (0%)	12 (21.8%)	0.22 (0.11-0.34)	$P < 0.001$
Insufflator alarms	0 (0%)	10 (18.2%)	0.18 (0.07-0.30)	$P = 0.001$
Increased abdominal wall tension	0 (0%)	8 (14.5%)	0.14 (0.05-0.26)	$P = 0.006$

Values are presented as number of patients, *Fisher's Exact Test
 NMB; neuromuscular blockade, n; number

Table 2 Surgical conditions while suturing the fascia

Ratings of surgical conditions while suturing the fascia*	Deep NMB group	Moderate NMB group
1 (excellent)	40	23
2 (good)	2	17
3 (acceptable)	0	1
4 (poor)	0	0

Values are presented as number of patients. NMB, neuromuscular blockade; *Mann-Whitney U (P < 0.001).