TEMA G - NEUROCIÊNCIAS (NEUROSCIENCES) / ESTUDOS CLÍNICOS OU SIMILARES

PO01–G6589

DEXMEDETOMIDINE LIMITS POSTOPERATIVE INFLAMMATION AND COGNITIVE DECLINE THROUGH AN ALPHA-2 ADRENOCEPTOR MECHANISM

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BACKGROUND

Postoperative cognitive decline can produce serious long-term consequences including loss of independence and increased mortality rate. Attempts to uncover the mechanisms have resorted to animal models that have provided insights into a probable neuroinflammatory basis for this complication[1]; resolution of the surgically-induced inflammation requires involvement of a vagal reflex that curtails synthesis and release of pro-inflammatory cytokines including IL-62.

Dexmedetomidine (DEX), an alpha-2 adrenergic agonist has been used to prevent delirium in ICU patients.[3] In an animal model, we determined whether DEX was effective in preventing postoperative cognitive decline and what the mechanism for this purported effect is.

METHODS

All animal experiments obtained institutional animal care and use committee approval in compliance with the requirements of the Animal Welfare Act and Regulations.

C57BL/6J mice aged 12-14 weeks were treated perioperatively with DEX, saline, or a combination of DEX + yohimbine (YOH; selective alpha-2 antagonist). In the first experiment (n=15/group), after the first exposure to the drug intervention, mice were trained in a trace-fear conditioning (TFC) paradigm and then immediately subjected to tibial surgery under isoflurane anesthesia. Three days postoperatively contextual memory for the TFC was assessed. In the second series of experiments (n=6/group), the mice did not undergo TFC and were sacrificed 24h after surgery for measurement of systemic- and neuro- inflammation.

RESULTS

Training in TFC was unaffected by drug intervention. Surgery induced a significant decrease in freezing behavior, a manifestation of memory decline ($p<0.001$). Surgery-induced memory decline was prevented by DEX (60.49±10.28 % vs. 36.91 ± 5.03 %, $p<0.001$); and this effect was reverse by YOH (fig.1). DEX also attenuated both postoperative systemic and hippocampal inflammation as evidenced by decrease in IL-6 levels ($p<0.05$ and $p<0.01$ respectively); again this effect was reversed by YOH (fig. 2).

DISCUSSION AND CONCLUSIONS

DEX is effective in limiting postoperative systemic- and neuro-inflammation cognitive decline as well as cognitive decline; these effects are dependent on its alpha-2 agonist properties. It is likely that DEX shifts the balance of the autonomic nervous system in favor of parasympathetic dominance that facilitates resolution of the surgery-induced inflammation and cognitive decline.

REFERENCES: 1 Anesthesiology, 2014 May;120(5):1160-7.

2 Ann Neurol., 2011 Dec;70(6):986-95 3 JAMA, 2007 Dec 12;298(22):2644-53.

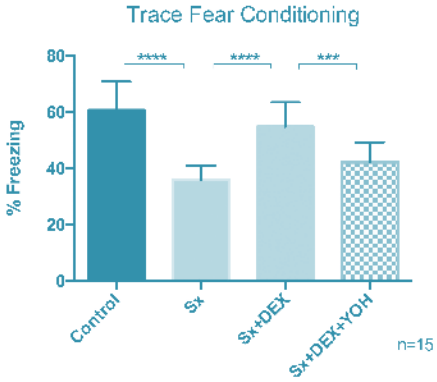

Figure 1- PODEX TFC

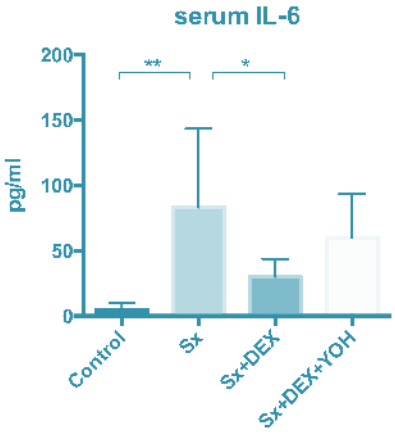

Figure 2- Serum IL6 PODEX

PO02–G6591

OBESE MICE WITH INSULIN RESISTANCE ARE SUSCEPTIBLE TO POSTOPERATIVE COGNITIVE DECLINE

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BACKGROUND

Postoperative cognitive decline (POCD) can produce serious long-term consequences including loss of independence and increased mortality rate. Amongst the possible risk factors for the develop-

ment of POCD include obstructive sleep apnea (OSA) and the metabolic syndrome[1,2]. In order to ascertain the possible reasons for the enhanced risk in these groups of patients we used an animal model involving New Zealand Obese (NZO) mice, a putative model for OSA, in which the male species also has insulin resistance.

METHODS

All animal experiments obtained institutional animal care and use committee approval in compliance with the requirements of the Animal Welfare Act and Regulations.

In the first experiment cohorts of 12-14 week old mice (n=12) were trained in a trace-fear conditioning (TFC) paradigm and then underwent tibial surgery under general anesthesia. On postoperative day 3 mice were tested for contextual memory in the TFC paradigm. In a second experiment, mice underwent surgery and were sacrificed 24h later to assess the systemic inflammatory response to surgery (n=6). Because of the positive influence of dexmedetomidine (DEX) on outcome in patients with OSA3, in a third set of experiments we sought to establish the effect of DEX on the development of postoperative cognitive decline and inflammation.

RESULTS

A postoperative decrement in freezing behavior in the TFC paradigm was noted in the male but not the female NZO mice; perioperative administration of DEX attenuated this effect (fig. 1). A postoperative increase in the pro-inflammatory cytokine, IL- 6, was noted in the male NZO mice; this inflammatory response was blocked by DEX (fig. 2).

DISCUSSION AND CONCLUSIONS

The increased susceptibility for the development of postoperative memory decline in male NZO mice may be due to insulin resistance. It is notable that rats with insulin resistance (as part of the constellation of abnormalities present in the metabolic syndrome) exhibited an exaggerated and longer-lasting postoperative cognitive decline. DEX, an alpha-2 adrenergic agonist, may protect susceptible organisms from postoperative, inflammation-based, complications, such as cognitive decline, through its action on the autonomic nervous system promoting parasympathetic dominance.

REFERENCES: 1. J Anesth. 2011 Jun;25(3):337-44. | 2. Anesthesiology. 2012 Apr;116(4):788-96. | 3. J. Anaesthesiol Clin Pharmacol. 2011 Oct;27(4):447-58

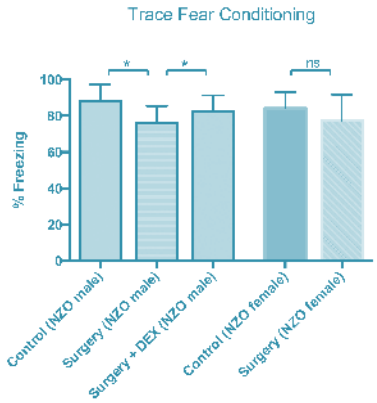

Figure 1- OSA TFC2

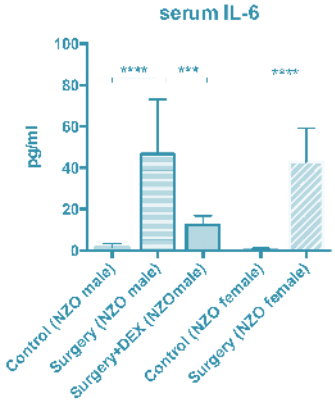

Figure 1- Serum IL6 OSA2

TEMA C - MONITORIZAÇÃO, EQUIPAMENTO E COMPUTADORES / *MONITORING: EQUIPMENT AND COMPUTERS*

PO03-C6653

THE BISPECTRAL INDEX (BIS) MAY HAVE A CLINICALLY SIGNIFICANT PROCESSING TIME DELAY THAT MAY BE INDEPENDENT OF THE SMOOTHING RATE

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BACKGROUND

Delay in the BIS processing time is a matter of concern. Although the manufacturer claims a delay of only 5 to 10 seconds[1], studies suggested longer delays[2,3], but were criticized for feeding recorded EEG to a computer and not using the clinical setting.In the present study we used a simpler approach, to investigate the existence of a time delay in BIS processing and its relation to the BIS smoothing rate (SR).

METHODS

Forty consecutive cases where general anesthesia was monitored with a BIS VISTA had the monitor set to a SR of 10, 15 or 30s. After the end of the case, instead of removing the BIS sensor, a scissors was used to cut the sensor at a point one cm distal to the connection between the sensor and the cable. The BIS monitor was carefully observed and a chronometer was used to identify the precise moment a BIS value was no longer displayed on the screen. Total time of BIS monitoring per case and BIS value before the BIS was cut were noted. Data are presented as mean±SD. Statistics used ANOVA, Student's t test and linear regression. Significancy was for P<0.05.

RESULTS

Of the 40 cases studied, the SR was 10s in 13, 15s in 14 and

30s in 13. In all cases the EEG signal was immediately lost, the message "press electrode 1" was shown but a BIS value remained displayed. BIS at the moment of sensor cutting was 82,2±9 and total monitoring time was 3h43min±2:40. Average time with a BIS value displayed on the monitor after cutting the sensor was 49,1±10s. There were no statistical differences in time displaying BIS between different SR: for the 10s SR it was 50.2±6, for the 15s SR it was 52.1±14 and for the 30s SR it was 45,4±7. Time with BIS displayed after cutting the sensor was inversely correlated with the value of BIS before cutting the sensor but had no correlation with duration of monitoring.

DISCUSSION AND CONCLUSIONS

By cutting the BIS sensor, the monitor does not seem to recognize immediately that there is no EEG signal and appears to be processing the BIS index. Our results may be another indication that the delay in BIS processing may be much higher than stated by the manufacturer. Our suggested average delay of 49s is shorter than the delays previously reported, but it is still clinically significant. The finding that the possible delay might be independent of the SR is a novelty that deserves further investigation.

REFERENCES: 1. Using the Bispectral Index During Anesthesia. A Pocket Guide for Clinicians. 2. Br J Anaesth 2009: 394-9 | 3. Anesthesiology. 2006:488-94

TEMA Q - SEGURANÇA DOS DOENTES / *PATIENT SAFETY*

PO04–Q6660

UM RARO CASO DE HIPERSENSIBILIDADE AO SEVOFLURANO

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INTRODUÇÃO

O sevoflurano (SEVO) é universalmente aceite como um agente seguro para a indução inalatória na população pediátrica e frequentemente administrado antes da obtenção de um acesso venoso. Não existem na literatura relatos de anafilaxia a agentes inalatórios no contexto peri-operatório.[1]

Descrevemos o caso de uma reacção cutânea induzida pela administração de SEVO.

CASO CLÍNICO

JHG, sexo masculino, 12 anos, saudável, foi admitido para correcção urgente de fractura dos ossos nasais. Nega antecedentes de alergias medicamentosas ou alimentares, excepto reacção cutânea aos 5 meses de idade aquando da realização de TC crânio-encefálico sem contraste e sob sedação; não obtivemos acesso a esses registos.

Procedeu-se à indução EV com fentanil (F), propofol (P), rocurónio (R) e dexametasona (D). Pouco tempo após início da administração do SEVO, verificou-se o aparecimento de eritema exuberante no tronco e pescoço; o gás foi imediatamente descontinuado com regressão célere do eritema. A cirurgia decorreu sem intercorrências sob manutenção com P. Antes da emergência anestésica, reintroduzimos o SEVO com reaparecimento do eritema após alguns segundos, e regressão do mesmo após a sua suspensão.

O doente foi orientado para a consulta de Imunoalergologia. Os testes cutâneos por picada (TCP) foram negativos para látex, F, R, P, D, iodopovidona e clorexidina; os testes intradérmicos (ID) foram negativos para F, R, P e D. O teste de activação de basófilos (TAB) mostrou-se positivo para o SEVO e P e negativo para F e R. Repetiram-se os TCP e ID para P, que se mantiveram negativos; os TCP também foram negativos para soja, ovo e SEVO.

DISCUSSÃO

Casos de alergia aos halogenados são raros na literatura; encontrámos apenas 3 relatos de alergia ao SEVO, todos em contexto de exposição ocupacional no bloco operatório.[2,3]

Neste doente, a negatividade do TCP para o SEVO provavelmente não é significativa devido à vaporização imediata aquando da aplicação do SEVO na pele. A sensibilidade e especificidade do TAB para o SEVO e P são desconhecidos e a prova de provocação com o fármaco suspeito mantém-se o teste de eleição para o diagnóstico. Neste caso, a relação temporal óbvia dos sintomas com a primeira administração e com a reexposição ao gás sugerem hipersensibilidade ao SEVO.

Segundo o nosso conhecimento da literatura, este será o primeiro relato de hipersensibilidade ao SEVO num contexto não ocupacional, devendo sensibilizar os anestesistas para o facto de o SEVO, tão largamente utilizado, não ser um agente inócuo.

REFERÊNCIAS: 1.Br J Clin Pharmacol. May 2011; 71(5): 647–658 | 2.Allergy. 2006 Dec;61(12):1485-6 | 3.Acta Anaesthesiol Scand, 2014 Oct; Vol 58, 9, 1151-1153

TEMA C - MONITORIZAÇÃO, EQUIPAMENTO E COMPUTADORES / *MONITORING: EQUIPMENT AND COMPUTERS*

PO05–C6676

CEREBRAL OXYGENATION MONITORING USING NIRS WITH THE INVOS MONITOR IN THE PRONE POSITION RESULTS IN LOWER MEASURED VALUES AT NORMOXIA AND HYPOXIA

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BACKGROUND

Non-invasive regional cerebral oxygenation (RcO_2) is widely

monitored using near infra-red spectroscopy (NIRS). Patients subjected to surgery in the prone position may require this monitoring, however, none of the monitors has been validated for use in this position. Our objective was to assess the performance of the INVOS cerebral oxygenation monitor in the prone position.

METHODS

Ten healthy volunteers were monitored with the INVOS while breathing 21 % oxygen, an hypoxic mixture delivered to achieve a SpO_2 of 90 % or a FiO_2 of 50 %. While breathing at normoxia or hypoxia they were asked to either normoventilate, hyperventilate, or hold their breath. Ethics committee and informed consent were obtained. Statistics used two-way paired t-test and regression analysis. Data are mean+SD.

RESULTS

Average FiO_2 to achieve a SpO_2 of 90% was 13%. At 21% O_2, SpO_2 was 99,57±0,4% (supine) and 99,3±0,7% (prone) (p=0,04). Also at 21% 02, RcO_2 was 66±9,0% in the supine position and 58,4±11,7% in the prone position (p=0,0005). With the hypoxic mixture SpO_2 decreased to 89% in both positions while RcO_2 also decreased significantly in the prone (54,8±3) vs the supine (57,9±3)(p< 0,05). At 50% O_2 there were no differences between the positions. For both positions at 21%, hypoxia and 50% O_2 there was a strong correlation between SpO_2 and RcO_2 (p< 0,01 and R2=0,11). None of the volunteers showed any clinical signs of cerebral hypoxia or any side effects.

DISCUSSION AND CONCLUSIONS

Our results suggest that positioning in the prone position may alter the measurements made by the INVOS monitor resulting in lower readings. The low readings obtained in the prone position most certainly do not reflect lower cerebral oxygenation and seem to represent an artifact of the monitor. The fact that in the prone position a correlation between SpO_2 and RcO_2 is maintained, suggests that the monitor keeps the ability to discriminate, but does so with an offset of the baseline. This could be due to changes in the venous component of blood related to venous stasis or to a change resulting from the fact that the sensors are pressed against the forehead and not in direct contact with room light. It seems appropriate to obtain a baseline for RcO_2 by placing the patient in the prone position while still awake.

TEMA Q - SEGURANÇA DOS DOENTES / *PATIENT SAFETY*

PO06-Q6806

INTRAOPERATIVE ALBUMIN ADMINISTRATION: ALWAYS A GOOD OPTION IN KIDNEY TRANSPLANTATION?

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1 - Centro Hospitalar do Porto

BACKGROUND

End-stage renal disease's (ESRD) prevalence is rising as well as its impact on patient's quality of life, with an increasing number of patients on renal replacement therapy. Kidney transplantation (KT) is the treatment of choice and the most cost effective to improve health status of ESRD patients. The role of intraoperative human albumin on graft function is controversial. Some studies reported no impact with intraoperative human albumin (<0.4 g/kg), while others found benefit using a high-dose of intraoperative human albumin (1.2-1.6 g/kg) on graft function. The aim of this study was to evaluate the role of intraoperative human albumin administration on graft function.

METHODS

Retrospective observational study of ESRD patients transplanted between January 2010 and December 2012. Clinical data collected from medical records included sex, age at KT, dose of human albumin infused, operation time, cold ischemia time. Outcome was graft function evaluated by estimated glomerular filtration rate (eGFR) upon discharge and at 1, 3, 6, 12 and 24 months after transplantation. Student's t-test was used to assess a relation between variables (IBM SPSS Statistics v.21). Quantitative variables are presented as mean ± standard deviation. Statistical significance was set at P<0.01.

RESULTS

The study analyzed 193 patients: 63.2 % males; age 47 ± 13 years; operation time 107 ± 34 min; cold ischemia time 707 ± 463 min. Human albumin was infused in 94.8 % of patients during transplantation. In 86.8 % was infused a low-dose (< 1.05 g/kg) and a high-dose (≥ 1.05g/kg) in 13.1 % of patients. A statistically significant reduction on graft function was found at every time of follow-up (table 1) using high-isdose human albumin (upon discharge p<0.0001; at 1-month p<0.0001; 3 months p<0.0001; 6 months p<0.0001; 1 year p<0.0001; at 2 years p = 0.008).

DISCUSSION AND CONCLUSIONS

Contrary to previous reports, our study found that intraoperative high-dose human albumin administration (> 1.05g/kg) was associated with a decrease in graft function in the first two years of after kidney transplantation. Although further studies are required to confirm these results, we suggest that high-dose intraoperative albumin should be used with caution in selected patients rather than as routine protocol.

Table 1 – Comparison of graft function betwen intraoperative low-dose and high-dose human albumin

eGFR (ml/min)	Albumin < 1,05g/kg (n=159)	Albumin < 1,05g/kg (n=159)	*p-value*
Upon discharge	53 ± 23	31 ± 18	0,0001
1-month	56 ± 21	36 ± 22	0,0001
3 months	61 ± 18	42 ± 22	0,0001
6 months	61 ± 20	40 ± 21	0,0001
1 year	64 ± 22	42 ± 23	0,0001
2 years	63 ± 23	48 ± 23	0,008

TEMA K - ANESTESIA OBSTÉTRICA / *OBSTETRIC ANAESTHESIA*

PO07–K6809

GRAU DE SATISFAÇÃO MATERNA E BLOQUEIO MOTOR NA ANALGESIA DE PARTO: PERFUSÃO CONTÍNUA EPIDURAL VS BOLUS EPIDURAL INTERMITENTE PROGRAMADO

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INTRODUÇÃO

A satisfação materna é um índice de qualidade da analgesia de parto. São muitas as variáveis mensuráveis, sendo a intensidade da dor e a qualidade do alivio da mesma, de grande importância. O objetivo deste trabalho foi avaliar o efeito na função motora e o grau de satisfação materna, quando utilizadas duas modalidades de manutenção analgésica: Bolus epidural intermitente programado (PIEB) e Perfusão epidural contínua (CEI).

METODOLOGIA

Após aprovação da comissão de ética do hospital, um estudo prospectivo foi conduzindo durante 4 meses, em mulheres que solicitaram analgesia do trabalho de parto. Foi administrado um bolus epidural inicial de 10-15 ml, com ropivacaina 0.15% + sufentanil 0.5 µg/ml e as grávidas foram randomizadas em 2 grupos: grupo CEI; grupo - PIEB (ambos com ropivacaina 0.1% + sufentanil 0.2 µg/ml a 10 ml/h). Foram permitidos bolus de resgaste de 5 ml em PCEA. Dados demográficos, dados relativos ao trabalho de parto, tipo de parto, bloqueio motor e grau de satisfação materna foram recolhidos. O grau de bloqueio motor foi quantificado com recurso ao score modificado de Bromage. A análise descritiva das variáveis foi utilizada para sumarizar os dados. Testes paramétricos e não paramétricos foram utilizados nas comparações entre variáveis. Um valor de $p \leq 0.05$ foi considerado estatisticamente significativo.

RESULTADOS

310 grávidas foram incluidas no estudo (PIEB=139; CEI=171). Os dois grupos foram homogéneos em relação às váriaveis estudadas. O bloqueio motor foi reportado em 16,1% no grupo CEI e em 6,8% no grupo PIEB ($p<0,038$). No grupo CEI, 6.6% das grávidas apresentaram naúseas ou vómitos e 11,4% prurido, enquanto que no grupo PIEB essa percentagem foi de 1,7% e 5,1%, respectivamente. O score médio de satisfação materna no grupo CEI foi de 8,59±0.2 e de 8,50±0,3 no grupo PIEB. Não se verificaram diferenças estatisticamente significativas entre os grupos quando foram consideradas as variáveis: naúseas e vómitos, prurido e *score* médio de satisfação.

DISCUSSÃO E CONCLUSÕES

Apesar da manutenção da analgesia do trabalho de parto com PIEB resultar em menor bloqueio motor materno, o grau de satisfação materna com a analgesia do trabalho de parto é similar em ambos os grupos.

REFERÊNCIAS: Curr Opin Anesthesiol 2013;26:261–267; Anesth Analg. 2011;113:826-831

TEMA C - MONITORIZAÇÃO, EQUIPAMENTO E COMPUTADORES / *MONITORING: EQUIPMENT AND COMPUTERS*

P008–C6812

THE PLETHYSMOGRAPHY WAVE FROM PULSE OXYMETER MAY ALLOW ACCURATE CALCULATION OF THE PULSE PRESSURE VARIATION

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BACKGROUND

Pulse Pressure Variation (PPV), along with Stroke Volume Variation (AVV) are increasingly accepted as a very useful method to assess the hemodynamic status and the volemia of patients under mechanical ventilation. However, PPV measurement requires the use of an arterial catheter and a special monitor. One can replace such monitor by performing a manual measurement of the PPV from the pressure trace of an arterial catheter. However, in many instances, one is faced with hemodynamic and volemic changes in patients who do not have an arterial catheter. In such cases the observation of the changes in size of the plethysmographic curve on the monitor associated with the respiratory cycles seems to provide information regarding the existence of a significant PPV. We printed the waves from an arterial line and the plethysmography, measured them to calculate the plethysmographic wave amplitude and compared the results with PPV.

METHODS

We used data from 11 patients who had an arterial line for invasive pressure monitoring and performed two analysis per patient obtaining one measurement before the beginning of surgery and one during surgery in order to try to obtain both low PPV and higher PPV. At those moments the arterial line and plethysmography waves were saved and printed on paper. Of line analysis was performed to extract the PPV from both waves. The plethysmography wave was treated as if it was a pressure wave. 22 pairs of data were obtained. Linear regression analysis was performed.

RESULTS

The calculated PPV values were plotted and are presented in figure 1. A wide span of PPV values was obtained and a very sinificant correlation was obtained.

DISCUSSION AND CONCLUSIONS

This result supports the hypothesis that the wave of the plethysmography can provide useful information about the hemodynamic status and the volemia of patients under mechanical ventilation. Further investigation is warranted and it may encourage the development of simple and inexpensive accessories to help assess the volemic status of patients.

REFERENCES: Desebbe O, et al. The Ability of Pleth Variability Index to Predict the Hemodynamic Effects of Positive End-Expiratory Pressure in Mechanically Ventilated Patients Under General Anesthesia. Anesth Analg. 2010; 110:792-8

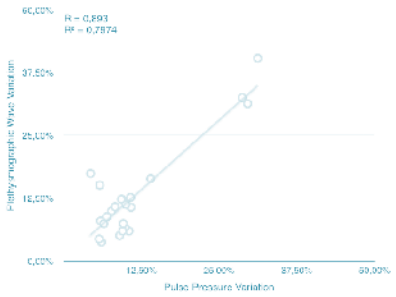

Figure 1.t

PO09–C6885

IDENTIFICAÇÃO DE ATRASO NA RESPOSTA DO BIS À INDUÇÃO DA ANESTESIA

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INTRODUÇÃO

Sabe-se que existe um atraso no cálculo BIS. Segundo o fabricante é de 5 a 10 segundos e estará relacionado com a taxa de suavização do monitor. Outros estudos sugeriram um atraso maior mas foram criticados pela metodologia usada.[1] O objectivo do presente estudo foi avaliar a existência de um atraso na resposta do BIS através de uma abordagem inovadora recorrendo à análise da diferença entre o BIS previsto e o BIS real na indução da anestesia geral com propofol e remifentanil. Outro objectivo foi analisar esse atraso em função de dois protocolos de indução diferentes.

METODOLOGIA

Foram analisados dados de doentes com duas técnicas de indução diferentes: G1 – propofol a 1% a 200ml/hr até perda de consciência (LOC) seguido de remifentanil TCI com alvo Ce de 2.5ng/ml; G2 – remifentanil TCI com alvo Ce de 2.5ng/ml seguido de propofol a 1 % a 200ml/hr até LOC. Depois de LOC o objectivo foi manter o BIS entre 40 e 60. A manutenção foi com TCI para ambos. Os dados das Ce's do propofol(Pk-Schnider) e remifentanil(Pk-Minto) e do sinal BIS (taxa de suavização 15 seg) foram recolhidos a cada 5 segundos (Rugloop), durante os primeiros 20 minutos, sendo depois utilizados para identificar a farmacodinâmica[2] de cada doente e prever a resposta do BIS através do método dos mínimos quadrados não lineares.[3] A existência de atraso no BIS foi identificada como a diferença de tempo entre a resposta prevista do modelo farmacodinâmico e a real do doente. Os dados foram de doentes incluídos em estudos com aprovação institucional e consentimento informado. Os dados são média±DP. A estatística usou t-Student.

RESULTADOS

Foram analisados dados de 10 doentes em cada grupo (tabela-1). As concentrações dos fármacos e o BIS previsto pelo modelo versus o BIS real de cada doente são apresentados nas Figs 1,2. Foi identificado um atraso de 0.63±0.28 minutos no G1 e de 1.70±0.49 minutos no G2 (p<0.001). O erro médio absoluto entre o BIS previsto e o sinal real foi de 4.90±2.10 no G1 e de 9.60±3.20 no G2 (p<0,001).

DISCUSSÃO E CONCLUSÕES

Estes resultados sugerem um atraso na resposta do BIS em média entre 0.63 e 1.70 minutos, muito superior à anunciada pelo fabricante e clinicamente significativo. Este atraso é próximo do sugerido noutros estudos, mas o presente estudo tem a vantagem de usar dados de doentes reais. A constatação de um atraso diferente em função da indução se iniciar por propofol ou remifentanil pode estar relacionada com o facto de os modelos farmacocinéticos usados não preverem correctamente a farmacodinâmica ou de a variabilidade interdoente ser maior que o esperado. Esta diferença sugere que a interacção entre os fármacos pode ter magnitudes diferentes conforme o método de indução utilizado. Estes achados são clinicamente relevantes: o BIS deve ser interpretado tendo em conta um atraso e, na indução, em função da ordem da utilização do propofol e remifentanil.

REFERÊNCIAS: 1.Br J Anesth 103(3):394-399.2009 | 2. Anesthesiology 92(6):1603–16.2000 | 3. Dennis Nonlinear least squares Acad Press.1977

Tabela 1: Dados demográficos dos pacientes.

	G1	G2
ASA	1/2/3	1/2/3
Idade (anos)	47±16	59±17
Peso (Kg)	66±11	65±12
Altura (cm)	164±10	163±12
Mulheres	4	5
p>0.05		

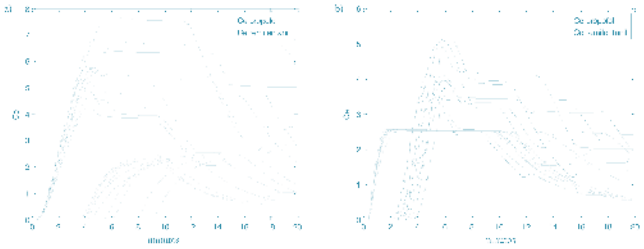

Figura 1: Concentração efeito do propofol (Ce de propofol – em µg/ml) e do remifentanil (Ce de remifentanil – em ng/ml), para a) 10 doentes do Grupo 1 e b) 10 doentes do Grupo 2, na fase de infução da anestesia.

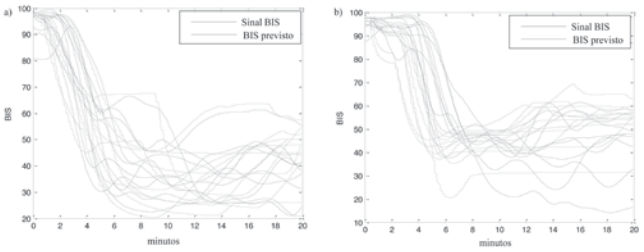

Figura 2: Sinal BIS versus BIS previsto para a) 10 doentes do Grupo 1 e b) 10 doentes do Grupo 2, na fase de infução da anestesia.

TEMA I - FARMACOLOGIA / *PHARMACOLOGY*

PO10–I6901

EFFICACY OF A NEW METHOD TO ADMINISTER PROPOFOL ANESTHESIA ASSURING THAT THE BIS IS MAINTAINED BETWEEN 60 AND 40 THROUGHOUT THE INDUCTION PHASE

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BACKGROUND

Since the concentration of propofol required to induce unconsciousness is higher than the concentration required to maintain unconsciousness, it is important to titrate propofol to avoid the occurrence of excessive anesthesia and achieve BIS values between 60 and 40 throughout the induction phase. We have previously shown that the higher the propofol predicted cerebral concentration (Ce) required to induce loss of consciousness (LOC) the more propofol Ce should be reduced after LOC in order to achieve a BIS between 40-60 and we published a formula1 to calculate, for individual patients, the target Ce following LOC based on the Ce at LOC. The goal of the present study was to test assess the effectiveness of that formula.

METHODS

With institutional approval and patient consent, we applied this formula to conduct anesthesia in 11 patients and compared the post induction BIS level in these patients with the BIS level in historic controls of patients in whom the formula was not applied. A Fresenius pump was set to TCI-View mode and propofol 1 % was started at 3,3ml/kg/hml/h until LOC. At LOC the infusion was stopped, the predicted effect-site concentration(Ce) of propofol, according to Schnider's Pk model, was noted, and the pump was switched to TCI mode with a Ce target calculated by the previously published formula. Propofol infusion continued and data were recorded (Rugloop) every 5 seconds. Of-line analysis was performed to examine BIS parameters at LOC and following LOC. Data from 11 historic controls was used for comparison: patients were given propofol 1 % at 3,3ml/h until LOC and after LOC TCI was started with a Ce target equal to the Ce of LOC for at least 10 minutes. We compared BIS parameters during the immediate post induction phase, starting 2min after LOC until 8min after LOC. Data are mean±SD, statistics uses Student's t test.

RESULTS

Demographics are shown in Table 1. Propofol Ce and BIS at LOC did not differ between groups; application of the formula reduced propofol Ce following LOC by 30 % and BIS was significantly higher when propofol was reduced after LOC (Table2). BIS above 60 did not occur.

DISCUSSION AND CONCLUSIONS

Induction of anesthesia is often associated with unwanted side effects of anesthetics, namely low BIS and hypotension, which may worsen outcome. It was shown that BIS below 45 or 40, for at least 5 minutes, is related to worse outcome. It is important to find ways of minimizing excessive anesthesia in the immediate post-induction phase. Results demonstrate that using a TCI system to individualize propofol Ce required for LOC and using that information to calculate the reduction in propofol Ce after LOC with the proposed formula, results in maintaining the BIS within 60-40 during the initial minutes of induction. To our knowledge this is the first demonstration of the effectiveness of a scheme to improve anesthesia induction individualizing propofol requirements for LOC avoiding excessive depth.

REFERENCES: 1. Eur J Anaesth,Vol.25,Supp.44,p150,2008

Table 1 - Demographic Data

	With Formula	No formula
ASA	1/2	1/2/3
Age (years)	50±16	48±15
Weight (Kg)	70±17	66±11
Height (cm)	167±11	163±10
Gender	7 females	6 female

Table 2 - Mean and ST for propofol Ce and BIS with formula and no formula at LOC and for 6 minutes from 2 minutes after LOC. Student's t test.

	Propofol Ce at LOC	BIS for 6 min from 2 min after LOC	Propofol Ce for 6 min from 2 min after LOC
With formula	69.09±13.22	51.12±6.59	3.56±0.51
No formula	64.44±13.44	39.94±10.80	5.13±1.27
t-student (p)	0.400	0.010	0