

23 Nisan Kutlu Olsun!



POSTOPERATİF DELİRYUM



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Yalnızlık ve Korku

Deliryum



Akut veya subakut gelişen

beyin metabolizma ve işlevlerindeki

yaygın, geçici

ve

genellikle de tamamen geri dönüşümlü

bir bozukluktur

Deliryumun Klinik Özellikleri

- Bilinçte ve dikkatte bozulma
 - Odaklanma
 - Sürdürme
 - Başka konuya kaydırma
- Demansa bağlı olmayan kognitif bozukluk
 - Zayıf hafıza
 - Yönelim kaybı (Zaman ve mekan)
 - Lisanda bozulma (Dizartri, enkoheran konuşma)
- Kısa zaman süreci içinde gelişim (saat-gün)
- Gün içinde dalgalanma

Deliryumdaki kişi->
Uykulu, huzursuz ve
hayali felaketlerden
korkan
(Encyclopedia Britannica)



April, 1905

CALIFORNIA STATE JOURNAL OF MEDICINE

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been a stumbling-block in the way of all explanations of the histogenesis of locomotor ataxia. The frequency with which oculomotor paralyzes occur in syphilis not attended by tabes seems to confirm the luetic theory.

In 1894 Edinger, of Frankfort, proposed a theory on the etiology of nervous diseases, and especially of tabes, which should not be disregarded. This theory is based upon the fundamental proposition that the molecules of a cell are in a state of labile equilibrium such that if one part becomes enfeebled, it is overthrown and strangled by its neighbors. In a similar manner components of tissues are hypertrophied at the expense of enfeebled constituents. When a cell performs its functions normally, its contents are destroyed, but are immediately replaced in the regenera-

ACUTE DELIRIUM.*

By H. E. SANDERSON, M. D., Stockton.

THE closeness with which this affection is allied to the distinctly somatic affections met with in general practice, and the shortness of its course with lethal outcome, render it of more than passing interest to the profession at large, and entitle it to your earnest consideration at this time. When you remember that in the cases I am about to describe the patients were sent to us from considerable distances by rail, and in some cases from general hospitals, to die within a few days after admission, necessity of bearing in mind the existence and leading characteristics of the disease will be evident.

Acute Delirium. Nisan 1905

Trans Am Climatol Assoc. 1904; 20: 81-91.

PMC

The Delirium Noticed in Cardiac Disease

Roland G. Curtin

E. Regis, in his *Practical Manual of Mental Medicine*, a book that is highly esteemed by neurologists, says, under the heading of Cardiac Insanity:

“Affections of the heart have, rather frequently, an injurious effect on the mind, and are capable of producing various disorders

of the ideas and the emotions, from simple change of character and rudimentary morbid conceptions to confirmed insanity.

by reason of the heart's weakness. Some of the factors that might be assigned as a cause of the delirium are:

1. Carbon dioxide.
2. Faulty metabolism.
3. Arterial congestion.
4. Venous congestion.
5. Capillary congestion.
6. Edema of the brain.
7. Anæmia of the brain.
8. Strain on the nervous system from insomnia and constant struggle for breath.
9. Dread of death.

THE DELIRIUM NOTICED IN CARDIAC DISEASE.

BY ROLAND G. CURTIN, M.D.,
PHILADELPHIA.

WHETHER or not there is a passing delirium occurring in the later stage of diseases of the heart, and whether it is peculiar to

I find it hard to determine from a study of the has been at my disposal. Cases of insanity associated with heart disease have been carefully and closely studied, altogether different condition that I desire to call . The great difficulty in studying and classifying of advanced heart disease is that it is often hard to separate the symptoms depending on the primary disease from those of the commonly associated complications. In the series here recorded I have made every effort to distinguish these from other diseases, such as hysteria, fever, Bright's disease, pneumonia or pleural trouble, jaundice, blood poisoning, chronic alcoholism, or anything else which might possibly be a cause of permanent or transitory delirium.

These cases are quite rare, so that a long time has been required to select a sufficient number to enable me to arrive at any reasonable conclusions. These cases will be given, only mentioning the salient points, in the hope that they may assist in determining the cause of the delirium. I have seen a great many cases of heart disease in my practice, but have not found more than four in which it was associated with continual insanity.

E. Regis, in his *Practical Manual of Mental Medicine*, a book that is highly esteemed by neurologists, says, under the heading of Cardiac Insanity:

“Affections of the heart have, rather frequently, an injurious effect on the mind, and are capable of producing various disorders



Kardiyak postoperatif deliryum

Int Psychiatry Clin. 1967;4(2):133-55.

Open-heart surgery: physiological variables of mental functioning.

Blachly PH.

Int Psychiatry Clin. 1967;4(2):115-31.

Psychiatric complications of cardiac surgery.

Kornfeld DS.

J Thorac Cardiovasc Surg. 1966 Sep;52(3):422-7.

Relation of cardiac output to post-cardiotomy delirium.

Blachly PH, Kloster FE.

- Kalp cerrahi hastaları yüksek riskte
- Genellikle postop 72 saat içinde

DELİRYUM NE KADAR BÜYÜK BİR PROBLEM??

1. Oldukça sık

Günümüzde kalp cerrahisi kalp-akciğer pompalarının kullanılmaya başladığı 1050'li yıllardan beri önemli ölçüde gelişti.

Intraoperatif ve postoperatif bakım eskiye göre daha güvenli

Ancak

- Kompleks cerrahi girişimler*
- Populasyon yaşının ▲*

hala sık ve güncel bir sorun

• **Özel populasyon:**

- Kanser hastaları %88*
- YB kabul edilen >65 yaş hastalar %70*
- Kalça kırıkları %50*
- Kalp cerrahisi hastaları %30*
- Genel cerrahi hastaları %10-15*
- Uzun dönem evde bakım hastaları %6-14*

DELİRYUM NE KADAR BÜYÜK BİR PROBLEM??

2. Deliryum sıklıkla tanınmıyor

%60 (%33-95)

*Deliryum ya tanınmıyor ya da depresyon psikoz
yada demans gibi hatalı tanılar alıyor*

*American Delirium Society
Inouye, J Ger Psy and Neurol. 1998
Bair, Psy Clin N Amer 1998*

DELİRYUM NE KADAR BÜYÜK BİR PROBLEM??

3. Deliryum multifaktöriyel

The Society of Critical Care Medicine:

THINK

- **T** oksik durumlar (KKY, Şok, Dehidratasyon, İlaçlar, Organ yetm)
- **H** ipoksemi
- **i** nfeksiyon
- **N** onfarmakolojik müdahale (Gözlük, işitme cihazları, uyku protokolleri, müzik, gürültü kontrolü, oryantasyon sağlayıcılar)
- **K** (Potasyum vd elektrolit bozuklukları)

Deliryumda Moleküler Mekanizmalar

➤ En önemli hipotez -> Santral kolinerjik eksiklik

➤ *Nörotransmitter anormallikleri*

- Santral Asetilkolin düzeyinde ↓^⑤ **DOPAMİN etkinliğinde** ↑
DOPAMİN X ACH
 - Ach duygu durum
 - Motor etkinlik
 - REM uykusu
 - Dikkat
 - Bellek
- **GABA** ↓ **ve Glutamat** ↑

➤ **Düşük Triptofan düzeyleri** beyin serotonin sentezini azaltmak yada melatonin üretimini değiştirerek

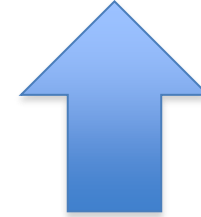
➤ **TNF α , IL-1beta, IL-6 ve 8 ve CRP gibi pro-enflamatuvar sitokinler ilişkilendirilmiştir**

Deliryumda Moleküler Mekanizmalar

-> Serebral atherosklerozün rolü?

Serebrovasküler Hastalıklar / Risk ve Depresyon ilişkisi

- ***MRI'da ciddi beyaz madde dansite artış x 3.9***
- ***Düşük infrared spektroskopi düzeyi***
POD gelişimi ile ilişkili

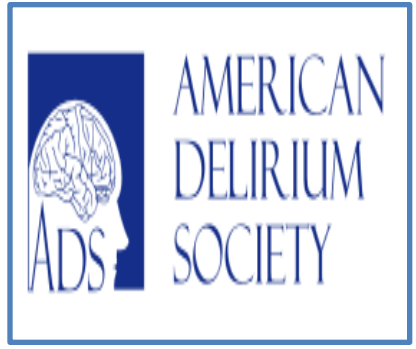


- ***Hatano Y et al. White-matter hyperintensities predict delirium after cardiac surgery. Am J Geriatr Psychiatry. 2013***
- ***Schoen J et al. Preoperative regional cerebral oxygen saturation is a predictor of postoperative delirium in on-pump cardiac surgery patients: a prospective observational trial. Crit Care. 2011***
- ***Mast BT et al. The vascular depression hypothesis: the influence of age on the relationship between cerebrovascular risk factors and depressive symptoms in community dwelling elders. Aging Ment Health. 2005***

***Ateroskleroz deliryuma predispozisyon yaratan bir risk faktörü
olabilir***

DELİRYUM NE KADAR BÜYÜK BİR PROBLEM?

4. Yüksek mortalite ve morbidite ile ilişkili



- *Hastane mortalitelitesi yüksek (%14 -%5)*
- *Hastane kalış süresi uzun (21 gün-9 gün)*
- *Mekanik vent süresi artıyor*

DELİRYUM NE KADAR BÜYÜK BİR PROBLEM??

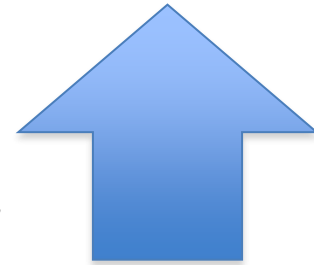
5. Deliryum maliyeti oldukça yüksek

Deliryum epizodları yaş, comorbiditeler, hastalığın ciddiyeti, organ disfonksiyonunun derecesi, nazokomiyal enfeksiyonlar, hastane mortalitesi vd nedenlerle ortalama maliyetleri

\$/€

YB için -> %39

Hastane için -> %31



Milbrandt 2004 Critical Care Med 32:4 ;Leslie 2008

**KALP
CERRAHİSİNDE
POSTOPERATİF
DELİRYUM
KAÇINILMAZ BİR
TEHDİT Mİ?**

1964 -2014 -> 196 çalışma

- 123 risk faktöründen sadece **yaş** yıllar içinde tutarlı olarak risk faktörü olarak gösterilmiş
- *Bazı risk faktörlerinin kanıt düzeyleri yetersiz bulunmuş*
 - Düşük albumin düzeyi
 - Elektrolit düzensizliği/kan glukoz düzeylerinin risk faktörü olarak kullanımı

- *Anestetik ve cerrahi yönetim*
- *İntraoperatif kan basıncı*
- *Hızlı yeniden-ısınma*
- *Enflamasyon*
- *Aritmiler önemli*

Fakat bugüne kadar deliryuma katkıda bulunan kanıtlanmış bir anestezi yöntemi yada intraop strateji de tanımlanmamış

Genel anestezi diğer anestezi yöntemleriyle karşılaştırıldığında deliryum gelişimi için değil fakat **POCD için artmış riski** ile ilişkili (B)

Sedasyon/GA derinliğinin monitörizasyonu

Intraoperative burst suppression is associated with postoperative delirium following cardiac surgery: a prospective, observational study

Martin Soehle,[✉]# Alexander Dittmann,[#] Richard K Ellerkmann, Georg

- **Prospektif, Kalp cerrahisi**
- **n= 81**
- **Preop, intraop ve postop**
- **BIS, EEG asimetri (ASYM) ve Burst Supresyon Oranı (BSR)**

Patient characteristics

Group		Patients			p-value
		All	With delirium	Without delirium	
Number		81	26	55	
Age	[years]	72.9 ± 6.2	74.5 ± 6.5	72.1 ± 5.9	0.101
Gender	[m/f]	57/24	16/10	41/14	0.299
Height	[cm]	171.3 ± 8.5	169.6 ± 8.2	172.2 ± 8.6	0.212
Weight	[kg]	76.0 [70.0; 88.0]	74.0 [69.3; 78.3]	80.0 [70.0; 92.0]	0.083
Surgery:					
CABG	44		13	31	0.638
Valve	22		8	14	0.605
Misc	15		5	10	1.000

Intraoperative parameters

		Patients		p-value
		With delirium	Without delirium	
Duration of surgery	[min]	321 ± 69	326 ± 74	0.768
CPB time	[min]	131 ± 33	129 ± 35	0.786
Anaesthetic agents				
Sufentanil (total dose)	[µg]	406 ± 97	417 ± 106	0.679
Isoflurane (average)	[etVol %]	0.7 ± 0.1	0.7 ± 0.1	0.679
Average arterial blood pressure				
Intraoperatively	[mmHg]	87.8 ± 7.0	86.6 ± 5.6	0.464
During CPB	[mmHg]	65.1 ± 5.4	62.7 ± 6.1	0.125
Average body temperature	[°C]	35.6 ± 0.4	35.6 ± 0.4	0.515

Comorbidity and plasma electrolyte concentrations in comparison between delirious and non-delirious patients

		Patients with delirium (n = 26)	Patients without delirium (n = 55)	p-value
Comorbidity				
Congestive heart failure		9	24	0.48
Myocardial infarction		6	18	0.44
Diabetes mellitus		7	15	1.00
COPD		5	8	0.75
Peripheral vascular disease		2	5	1.00
Cerebrovascular disease		3	4	0.20
Preoperative plasma electrolyte concentrations				
Sodium	[mmol/l]	140 [137.8;142.3]	140 [139;141]	0.83
Potassium	[mmol/l]	3.7 [3.6; 4.1]	3.8 [3.5;4.1]	0.96

Intraoperative burst suppression is associated with postoperative delirium following cardiac surgery: a prospective, observational study

Martin Soehle,[✉]# Alexander Dittmann,[#] Richard K Ellerkmann,[#] Georg

- ***Intraop BSR'nin daha yüksek (BSR>0) ve daha uzun süre (107dk-44dk) POD ile ilişkili***

- *intraop BIS fark yok (44.6 ± 5.5)-(45.1 ± 7.7)*

Artmış anestezi derinliği BS'nu etkileyerek POD gelişmesine katkıda bulunuyor

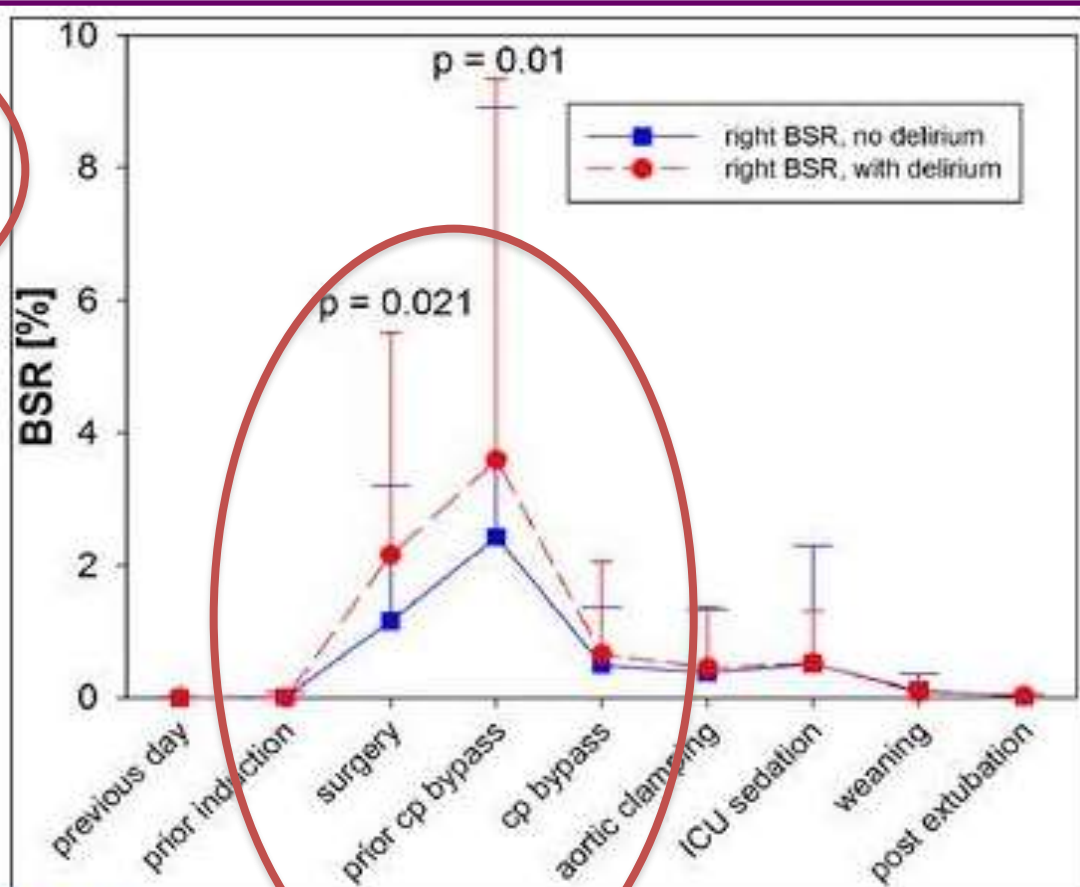


Figure 3

The Burst Suppression Ratio (BSR) as observed on the right side during the pre-, intra- and postoperative period. Data obtained in delirious or non-delirious patients are illustrated in red and blue, respectively. Cp bypass = cardiopulmonary ...

➤ *Yüksek doz anestetik EEG'de BS nuna neden oluyor*

➤ *Toplam derin anestezi süresi (öz BIS<45) artmış uzun dönem mortalite ile ilişkili*

Association of perioperative risk factors and cumulative duration of low bispectral index with intermediate-term mortality after cardiac surgery in the B-Unaware Trial. Kertai MD et al. B-Unaware Study Group. Anesthesiology. 2010

➤ *Düşük anestezi doz POD için bağımsız prediktör*

Whitlock EL et al. Postoperative delirium in a substudy of cardiothoracic surgical patients in the BAG-RECALL clinical trial. Anesth Analg. 2014

*Aslında anestezi doz göreceli bir kavram -> **Kime normal?**
Normal anestezi doz aslında relatif olarak overdoz olabilir*

Sedasyon/GA derinliğinin monitörizasyonu

HAYIR

DELİRYUM ÜÇ FARKLI KLİNİK TABLODA İZLENİYOR

Liptzin B, Levkoff SE. An empirical study of delirium subtypes. Br J Psychiatry. 1992 Dec; 161():843-5.

Deliryumda klinik farklılıklar

1. Hiperaktif tip deliryum %15-47

- Huzursuz, Ajite, Agresif/ Hiper-reaktif
- İrade Dışı Uyarılma
- Zarar Veren Hareketler

2. Hipoaktif tip deliryum %19-71 (*%92)

- Letharjik/Uykulu, Apatik /İnaktif, Sessiz
- Tanı sıklıkla gözden kaçır
- Sıkça depresyonla karıştırılır
- Hipoaktif epizod ajitasyondan daha uzun sürebilir

3. Mikst tip deliryum %43-56

- Hasta aynı gün içinde hem hiperaktif hem de hipoaktif olabilir





Contents lists available at ScienceDirect

Journal of Critical Care

journal homepage: www.jccjournal.org

Pharmacologic prevention and treatment of delirium in intensive care patients: A systematic review [☆]

Rodrigo B. Serafim, MD, MSc ^{a,b,c}, Fernando A. Bozza, MD, PhD ^{a,d}, Marcio Soares, MD, PhD ^e, Pedro Emanuel A.A. do Brasil, MD, PhD ^a, Bernardo R. Tura, MD, PhD ^a, E. Wesley Ely, MD ^{f,g}, Jorge I.F. Salluh, MD, PhD ^{a,e,*}

Journal of Critical Care 30 (2015) 799–807

1980-2014 yılları arası

cerrahi hastaların değerlendirildiği çalışmalar arasında, deliryum sıklığı, YBÜ yatış süresi, mekanik ventilasyon süresi ile farmakolojik yaklaşımlar ilişkili ancak yüksek heterojenite mevcut



Study	Year	Intervention	n	No. of delirium	Type of patients	Severity score	Diagnostic method
Gambellini et al [18]	2009	Rivastigmine at 3 doses of 1.5 mg per day, for 6 d, starting before surgery, median doses of 22 (5-22)	120	35	Elderly elective cardiac surgery with cardiopulmonary bypass	SAPS II placebo vs rivastigmine: 34.5 (18-67) vs 40 (15-60) ^a	CAM
Katznelson et al [19]	2008	Preoperative use of statin	1059	122	Cardiac surgery with cardiopulmonary bypass	N/A	CAM
Maldonado et al [20]	2009	Dexmedetomidine loading dose: 0.4 µg/kg and a infusion of 0.2-0.7 µg/kg per hour; propofol infusion of 25-30 µg/kg per minute; midazolam infusion of 0.5-2 mg/h	118	31	Elective cardiac surgery	ASA score (range, 1-4), mean (SD), dexmedetomidine vs propofol vs midazolam: 3.3 (0.5) vs 3.5 (0.5) vs 3.5 (0.57) ^a	DSM IV-TR
Pandharipande et al [21]	2007	Infusion of dexmedetomidine was started at 1 mL/h (0.15 µg/kg per hour) or 1 mg lorazepam and titrated by the bedside nurse to a maximum of 10 mL/h (1.5 µg/kg per hour dexmedetomidine or 10 mg/h lorazepam)	106	83	Mechanically ventilated medical and surgical ICU	APACHE II score, dexmedetomidine vs lorazepam 29 (24-32) vs 27 (24-32), SOFA 10 (8-12) vs 9 (7-11) ^a	CAM-ICU
Riker et al [22]	2009	Dexmedetomidine (0.2-1.4 µg/kg per hour) or midazolam (0.02-0.1 mg/kg per hour [n = 122]) titrated to achieve light sedation (RASS scores between -2 and +1) from enrollment until extubation or 30 d.	366	132	Mechanically ventilated medical and surgical ICU	APACHE II score, mean (SD) dexmedetomidine vs midazolam 19.1 (7.0) vs 18.3 (6.2); P = .35	CAM-ICU
Ruffino et al [23]	2009	Clonidine 0.5 mg/kg bolus, followed by continuous infusion at 1-2 mg/kg per hour or placebo (NaCl 0.9%) in on starting and throughout the weaning period from the mechanical ventilation	30	11	Surgery for AAD	N/A	DSM
Shehali et al [24]	2009	Dexmedetomidine or morphine (median dose of 0.48 and 4.0 µg/kg per hour, respectively)	306	35	Elderly after cardiac surgery	N/A	CAM-ICU
Wang et al [25]	2011	Haloperidol 0.5 mg intravenous bolus injection followed by continuous infusion at a rate of 0.1 mg/h for 12 h or placebo	457	88	Elderly after cardiac surgery	N/A	CAM-ICU
Hakim et al [26]	2012	Risperidone 0.5 mg or placebo every 12 h by mouth	177	101	Elderly after on-pump cardiac surgery	NYHA class III or IV, n (%) risperidone vs placebo: 31 (60.8%) vs 32 (54%)	ICDSC + DSM
Prakanrattana et al [27]	2007	Risperidone 1 mg or placebo sublingually when they regained consciousness	126	83	Elective cardiac surgery with cardiopulmonary bypass	NYHA functional class 2/3/4 risperidone vs placebo: 41/21/1 vs 43/20/0; P = .585	CAM-ICU
van den Boogaard et al [28]	2013	Intravenous haloperidol 0.5-1 mg/8 h ^a	476	340	High-risk ICU patients (PREDELIRIC score >50%)	APACHE II score, mean (SD) haloperidol vs control: 19 (6) vs 20 (7); P = .06	CAM-ICU
Mariocco et al [29]	2012	Preoperative use of statins	3154	89	Patients undergoing coronary artery bypass graft	N/A	CAM-ICU
Mardini and Bigdelian [30]	2013	Intravenous dexmedetomidine 8 mg before induction of anesthesia followed by 8 mg every 8 h for 3 d	93	N/A	Elective coronary artery bypass graft	N/A	DSM IV
Page et al [31]	2013	Haloperidol 2.5 mg or 0.9% saline placebo intravenously every 8 h	141	N/A	General adult intensive care unit	APACHE II score, mean (SD) haloperidol vs control: 19.8 (6.2) vs 19.7 (6.9)	CAM-ICU
Page et al [32]	2014	Statin administration the previous evening ^a	470	175	General adult intensive care unit	APACHE II score, mean (SD) statin vs control: 18 (7) vs 17 (7); P = .32	CAM-ICU

POD gelişimini önleme ->

✓ **15 çalışma**

✓ **6729 hasta**

- Rivastigmin-Risperidon
- Statin
- Deksmedetomidin
- Klondin
- Haloperidol

Mekanik ventile hastalarda deksmedetomidin kullanımı deliryum prevalansını azaltabilir



Tedavi ->
✓ **7 çalışma**
✓ **1784 hasta**

Characteristics of studies of treatment of delirium that met inclusion criteria

Author	Year	Intervention	n	No. of delirium	Type of patients	severity score	Diagnostic Method
van Eijk et al [33]	2010	Rivastigmin (starting at 0.75-6 mg bid) or placebo	440	104	Medical and surgical	APACHE II and SOFA score in rivastigmin vs placebo groups was 20.3 (8.9) vs 19.6 (7.9) and 5.6 (2.3) vs 5.5 (3.1), respectively ^a	CAM ICU
Girard et al [4]	2010	Haloperidol or ziprasidone or placebo (qid for 14 d)	101	48	Medical and surgical	APACHE II and SOFA score in haloperidol vs ziprasidone vs placebo groups was 26 (21-31) vs 26 (23-32) vs 26 (21-31) vs 10 (9-12) vs 11 (9-11) vs 10 (9-12) vs 11 (9-11), respectively	CAM ICU
Devlin et al [34]	2010	Quetiapine (50 mg bid) or placebo	222	36	Medical and surgical	APACHE II score and MODS in quetiapine vs placebo groups was 19.7 (5.3) vs 19.7 (5.3) and 5.3 (2.9) vs 4.1 (2.7), respectively	CAM ICU
Reade et al [35]	2009	Haloperidol (0.5-2 mg/h) or dexmedetomidine (2-0.7 µg/kg per hour) with or without loading doses	20	7	Mechanically ventilated and in whom extubation was not possible solely because of agitated delirium	APACHE II score in dexmedetomidine vs haloperidol groups was 13.3 (10-19), P = .383	CAM ICU
Skrobik et al [36]	2004	Olanzapine (starting dose of 5 mg/d) or haloperidol (starting dose of 2-5 mg tid); Lower doses were used to older patients	73	73	Medical and surgical ICU	APACHE II score in olanzapine vs haloperidol groups was 13.7 (4.49) vs 12.08 (4.49), P = .383	CAM ICU
Page et al [31]	2013	Haloperidol 2.5 mg or 0.9% saline placebo intravenously every 8 h	141	N/A	General adult intensive care unit	APACHE II score, mean (SD) haloperidol vs control: 19.8 (6.2) vs 19.7 (6.9)	CAM-ICU
Atalan et al [37]	2013	Haloperidol 5 mg or morphine sulfate 5 mg intramuscularly	787	53	Cardiac surgical patients	APACHE II score in haloperidol vs morphine groups was 5.69 (1.93), vs 6.33 (1.79), P = .21	CAM-ICU

- Rivastigmin
- Olanzepin
- Ketiapin
- Ziprasidon
- Morfin
- Haloperidol veya plasebo



Morphine is a Reasonable Alternative to Haloperidol in the Treatment of Postoperative Hyperactive-Type Delirium After Cardiac Surgery

Nazan Atalan, MD[✉], Meltem Efe Sevim, MD, Serdar Akgün, MD, Osman Fazlıoğulları, MD, Cem Basaran, MD

- 53 hiperaktif tip POD hastası (RASS skoru >+2)
- Grup Morfin, n=27
- Grup Haloperidol, n=26
- Hedef RASS skoru -1 ile +1

Figure 1: Richmond Agitation and Sedation Scale (RASS) scores Haloperidol vs Morphine

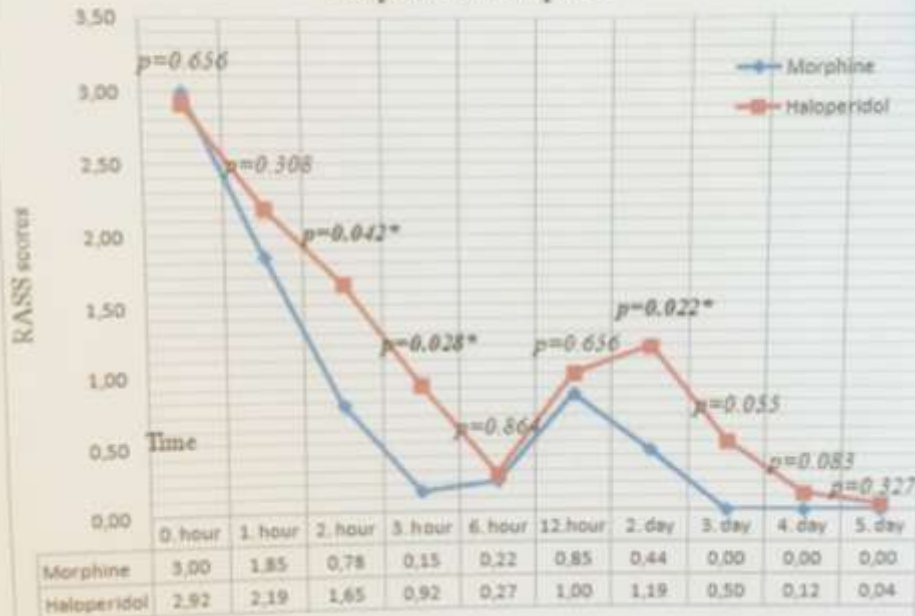


Figure 3: Percentage of patients who maintained a RASS score within target range



Characteristics of studies of treatment of delirium that met inclusion criteria

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van Eijk et al [33]	2010	Rivastigmin (starting at 0.75-6 mg bid) or placebo	440	104	Medical and surgical	APACHE II and SOFA score in rivastigmin vs placebo groups was 20.3 (8.9) vs 19.6 (7.9) and 5.6 (2.3) vs 5.5 (3.1), respectively ^a	CAM ICU
Girard et al [4]	2010	Haloperidol or ziprasidone or placebo (qid for 14 d)	101	48	Medical and surgical	APACHE II and SOFA score in haloperidol vs ziprasidone vs placebo groups was 26 (21-31) vs 26 (23-32) vs 26 (21-32) and 11 (10-13) vs 10 (9-12) vs 11 (9-13) ^a	CAM ICU
Devlin et al [34]	2010	Quetiapine (50 mg bid) or placebo	222	36	Medical and surgical	APACHE II score and MODS in quetiapine vs placebo groups was 19.7 (5.3) vs 21.4 (9.2) and 5.3 (2.9) vs 4.1 (2.7), respectively ^a	ICDSC
Reade et al [35]	2009	Haloperidol (0.5-2 mg/h) or dexmedetomidine (2-0.7 µg/kg per hour) with or without loading doses	20	7	Mechanically ventilated and in whom extubation was not possible solely because of agitated delirium	APACHE II score in dexmedetomidine vs haloperidol groups was 13.3 (10-18) vs 15.5 (11-19), $P = .383$	ICDSC
Skrobik et al [36]	2004	Olanzapine (starting dose of 5 mg/d) or haloperidol (starting dose of 2-5 mg tid); Lower doses were used to older patients	73	73	Medical and surgical ICU	APACHE II score in olanzapine vs haloperidol groups was 13.7 (4.49) vs 12.08 (7.4), $P = .14$	ICDSC
Page et al [31]	2013	Haloperidol 2.5 mg or 0.9% saline placebo intravenously every 8 h	141	N/A	General adult intensive care unit	APACHE II score, mean (SD) haloperidol vs control: 19.8 (6.2) vs 19.7 (6.9)	CAM-ICU
Atalan et al [37]	2013	Haloperidol 5 mg or morphine sulfate 5 mg intramuscularly	787	53	Cardiac surgical patients	APACHE II score in haloperidol vs morphine groups was 5.69 (1.93), vs 6.33 (1.79), $P = .21$	CAM-ICU

*Ne yazık ki;
deliryum
tedavisinde
mortalite yada
hastane kalış
süresini azaltmak
ile ilişkili tek bir
farmakolojik
yaklaşım yok*

Tedavi -> 7 çalışma (1784 hasta) incelenmiş

DELİRYUM YÖNETİMİ HEDEFLER NELER?

Clinical Practice Guidelines for the Management
of Pain, Agitation, and Delirium in Adult Patients
in the Intensive Care Unit

*The Society of Critical
Care Medicine*

Journal of the American Geriatrics Society

American Geriatrics Society Abstracted Clinical Practice Guideline for Postoperative Delirium in Older Adults

J Am Geriatr Soc. 2015;63(1):142-150.



Canadian Coalition for Seniors' Mental Health
Coalition Canadienne pour la Santé Mentale
des Personnes Âgées



2014 Guideline
Update

The Assessment and Treatment of Delirium

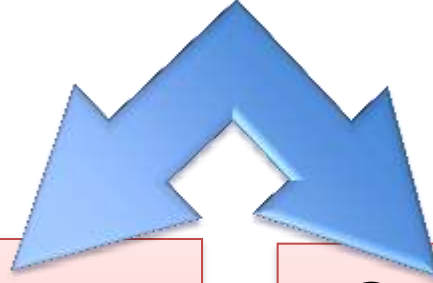
- ✓ Amerikan Geriyatri Derneği yaşlı hastalarda POD kılavuzu 2015
- ✓ Kanadalı yaşlıların ruh sağlığı grubu
- ✓ İlk kez 2006
- ✓ 2014 kılavuzu
- ✓ Hem önlem hem de tedavi yaklaşımları

**YÜKSEK RİSKLİ HASTADA
ÖNLEM**

TEDAVİ



*Deliryumu Başlatan Etyolojik Problemin Tanısı
Geri Döndürülebilir Nedenlerin Ortadan Kaldırılması*



Çevresel

- Mekan düzenleme
- Ekip yaklaşımı
- Fiziksel önlemler
- Işık, objeler

Semptomatik Medikal

- Fizyolojik destek
- Farmakolojik tedavi

POD önlem->

- *Yaşlı hastaların özel hastane ünitelerinde yatarak tedavi görmesi*
- *Seçilmiş vakalarda profilaktik antipsikotik kullanılabilir*
 - *Kalp cerrahisi sonrası **Risperidon** POD riskini azaltıyor (B)*
 - *Kısa süreli, düşük doz **Melatonin** yüksek riskli yaşlı hastalarda POD sıklığını ve/veya ciddiyetini azaltıyor (B)*

POD Tedavi ->

✧ *Farmakoterapi gereken ciddi deliryumlu yaşlılarda;*

✧ ***Haloperidol*** mevcut en iyi kanıtlarla önerilen antipsikotik (B)

➤ *Önceden var olan Parkinson hast yada Lewy cisimcikli demansta
Haloperidol önerilmez (B)*

➤ *Ajite deliryum tedavisinde benzodiazepinler ilk tercih olmamalı*

Postoperatif deliryumdan sonra uzun dönem psikolojik etkileri devam ediyor

- *Kısa deliryum süresi (1-2 gün) olan hst % 32'sinde*
- *Uzun deliryum süresi olan hst %55'inde*
kognitif yetmezlik gelişiyor

Rudolph JL et al. Delirium is associated with early postoperative cognitive dysfunction. Anaesthesia. 2008

Sleep and delirium after open heart surgery

Author: M. W. Johns, A. A. Large, J. P. Masterton, H. A. F. Dudley

Published: Ara 07, 2005

Pages: 377-381

DOI: 10.1002/bjs.1800610513



British Journal of Surgery

Volume 61, Issue 5, pages

377-381, May 1974

- Objektif olarak uyku kalitesi ve kantitesi ölçülmüş
- Kalp cerrahisi ve major abdominal cerrahi ; öncesi ve sonrası
- Erken postop dönemde uyku rahatsızlığının derecesi kalp cerrahisinde abdominal cerrahiden daha fazla
- Hastalar birkaç gün süren deliryum dönemlerinde sıklıkla hemşirelik yada diğer bakımları nedeniyle uyandırılmaları dışında da kesintisiz bir uyku sağlayamadılar
- REM uykusu yok ve uykunun Delta dalgaları azalmış

Postoperative delirium associated with prolonged decline in cognitive function and sleep disturbances after cardiac surgery

Kardiyak cerrahi sonrası uzayan kognitif fonksiyon kaybı ve uyku bozuklukları ile ilişkili ameliyat sonrası deliryum



Nazan Atalan,¹ Meltem Efe Sevim² *tgkdc.dergisi2013;21(2):358-363*

Table 2. Comparison of the mini-mental state examination scores of the delirium and non-delirium patients

	Total patients	Delirium patients		Non-delirium patients		p
	n	n	Mean±SD	n	Mean±SD	
MMSE scores (Before hospital discharge)	51	26	26.00±1.41	25	28.64±1.07	<0.001
MMSE scores (Postoperative 6 th month)	49	24	26.71±1.51	25	29.28±1.02	<0.001
MMSE scores (Postoperative 12 th month)	43	20	28.00±1.68	23	29.91±0.28	<0.001

Table 3. Comparison of the delirium and non-delirium patients at the postoperative 12th month

	Delirium patients		Non-delirium patients		p	OR	CI
	n	%	n	%			
Professional working life	9	34.6	8	32.0	1.000	1.12	0.35-3.60
Sleep disturbances*	19	73.1	5	20.0	<0.001	10.85	2.93-4.16
Assistance required in daily activities**	7	26.9	3	12.0	0.290	2.70	0.612-11.93

OR: Odds ratio; CI: Confidence interval; * The Pittsburgh Sleep Quality Index (PSQI) scores >5, ** Instrumental Activities of Daily Living scores >2.

PO - Demans – POCD ilişkisi

Demans beş kat deliryum riskini artıran önemli bir risk faktörüdür

*Elie M et al. Delirium risk factors in elderly hospitalized patients.
J Gen Intern Med. 1998*

ve tersi

Deliryumun kendisi demans ve uzun vadeli bilişsel bozulmaya yol açabilir

Jackson JC et al. Review The association between delirium and cognitive decline: a review of the empirical literature. Neuropsychol Rev. 2004

SONUÇ

DELİRYUM



Geliştirilen tüm cerrahi ve anestezi tekniklerine ve iyileştirilen mortaliteye rağmen kalp cerrahisi sonrası nörolojik hasar kognitif gerileme, deliryum ve inme şeklinde halen en sık görülen komplikasyonlardan biridir

Cropsey C et al. Cognitive dysfunction, delirium, and stroke in cardiac surgery patients. Semin Cardiothorac Vasc Anesth 2015;19:309-17

POD HEM KISA HEM DE UZUN DÖNEMDE ÖNEMLİ BİR PROBLEM

SONUÇ

DELİRYUM



- ✓ *Hedef -> Önlemek olmalı*
- ✓ *Altta yatan nedenler dikkate alınmalı*
- ✓ *Önce farmakolojik olmayan yöntemler denenmeli*
- ✓ *Yüksek riskli vakada düşük doz antipsikotikler*
- ✓ *Yaşlı hastalarda tam iyileşme enaz 6-8 hf sürebilir*
- ✓ *Bazı hastalarda kognitif etkiler tamamen geçmeyebilir*
- ✓ *Hastanın, ailenin ve bakıcıların gelecekteki risk faktörleri açısından eğitimi önemli*



- *Trailer Delirium experience, you tube video*
- *Agitated older Hospitalized patient, you tube video*
- *Think Delirium; Don't get Delirious Take sleep serious in the ICU, you tube video*
- *Delirium- trailer, you tube video*