

PHARMACEUTICALS EFFECT ON POLYSOMNOGRAPHY

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SLEEP DEFINITIONS

- A reversible behavioral state of perceptual disengagement from and unresponsiveness to the environment.
- A process, unlike coma, that is physiologic, recurrent, and reversible.

MAIN POINTS

- Understanding of common medications potential effects.
- Documentation of the patient's medical history and medications list.
- Comorbidities could affect the accurate diagnosis of sleep disorders.
- Main comorbid disorders: psychiatric (anxiety/depression), neurologic (parkinson's,epilepsy) and cardiac (arrhythmia).
- Effects: shortening,lengthening, and intensifying non-rem and rem stages.
- Pharmacologic sources don't have reference to drug effects on sleep except in text books (eg: desk reference of clinical pharmacology).
- Medications have clinical (helping depression but causing insomnia) and structural effects (psg changes).

BENZODIAZEPINES

- Main effects: hypnotic, anticonvulsant, and muscle-relaxant properties.
- Shorten sl , increase tst , increase $n2$, increase in amplitude of $n2$ waves, increase in spindle density, suppress sws , prolong rl .
- Acute withdrawal is associated with decreased tst as well as rem and sws rebound.

NON-BENZ

- Ambien, Sonata, Lunesta
- Shorten SL, increase TST.
- Minimal changes in sleep architecture.
- Parasomnia (sleep walking)
- No significant rebound of sleep parameters in general.
- Ramelteon effect on PSG similar to non-benz.

ANTIDEPRESSANTS

- ANTIDEPRESSANTS COULD IMPROVE OR DISTURB SLEEP. PSG AND SUBJECTIVE REPORTS DO NOT ALWAYS CORRELATE.
- TCAs: SHORTEN SL, DECREASE REM%, PROLONG RL, MAY INCREASE TST, MAY INCREASE DELTA WAVE ACTIVITY, AND INCREASE PLMS.
- SSRI: MOST INCREASE WAKEFULNESS, DECREASE TST, INCREASE PLMS. A TECH SHOULD BE AWARE OF THIS SIDE EFFECT. PROZAC EYES.

NEUROLOGICAL AGENTS

- ANY MEDICATION WORKS ON CNS HAS THE POTENTIAL TO AFFECT SLEEP.
- EPILEPSY PATIENTS ARE OFTEN TREATED FOR SLEEP DISORDERS (DAYTIME FATIGUE, DISTURBED NOCTURNAL SLEEP).
- SOME AGENTS LIKE PHENOBARBITAL KNOWN FOR SIGNIFICANT SEDATION, WHILE OTHERS LIKE FELBAMATE (FELBATOL) KNOWN FOR BOTH SEDATION AND INSOMNIA.
- NEWER AGENTS FOR EPILEPSY SHOW VARIABLE EFFECTS ON SLEEP ARCHITECTURE.

OPIOIDS

- OPIOIDS ARE DRUGS CONTAIN NATURAL OR SYNTHETIC CHEMICALS BASED ON MORPHINE, THE ACTIVE COMPONENT OF OPIUM.
- OPIOIDS ARE RESPIRATORY DEPRESSANT, PARTICULARLY DURING SLEEP.
- RESPIRATORY DEPRESSION IS RARE IN HEALTHY INDIVIDUAL, HOWEVER, IN PATIENTS WITH PULMONARY DISEASES OR OSA WHO TAKE OPIOIDS MAY SHOW SLOWER VENTILATION DURING SLEEP STUDY.

CARDIAC MEDICATIONS

- BETA BLOCKERS EFFECTS ON SLEEP: INSOMNIA, NIGHTMARES AND VIVID DREAMS
- SIDE EFFECTS MORE COMMON WITH LIPOPHILIC AGENTS (METOPROLOL, PROPRANOLOL), LESS COMMON WITH HYDROPHILIC AGENTS (ATENOLOL).
- ATORVASTATIN AND LOVASTATIN “REPORTED” TO CAUSE INSOMNIA.

ALCOHOL	A	W
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- | | | |
|------------------------|---|---|
| • TST | + | - |
| • SL | - | + |
| • SLEEP CONTINUITY(SC) | + | - |
| • SWS % | + | - |
| • REM % | - | + |
| • REM LATENCY (RL) | + | |

ANTICONVULSANTS

- CARBAMAZEPINE (DAYTIME SOMNOLENCE +, N1 % -)
- VALPROATE (DAYTIME SOMNOLENCE +)
- PHENYTOIN (SL -)

ANTIDEPRESSANTS

A W

1-MAO (NARDIL, EUTONYL)	TST	-	
	REM%	-	+
	RL	+	
2-SSRI (PROZAC, PAXIL, ZOLOFT) SL	SC	-	
	N1 %	-	
	REM %	-	
	RL	+	
	SL	+	
3- NEFAZODONE, TRAZODONE:SL	SC	+	
	SWS %	+	
	RL	+	
	SL	+	
4- TCA (ELAVIL,DOXEPIN)	TST	+	
	SL	-	
	N2 %	+	+
	REM %	-	+
	RL	+	-

ANTIHYPERTENSIVES

A

W

1- BETA BLOCKERS: (METOPROLOL, ATENOLOL)

SC

-

REM %

+

2-CLONIDINE: TST

+

N2 %

+

SWS %

+

REM %

-

+

RL

+

3-METHYLDOPA: TST

+

4-RESERPINE: SL

-

REM %

+

RL

-

SEDATIVES

A

W

1-BARBITURATES:	TST	+	-
(PHENOBARBITAL)	SL	-	+
	SC	+	-
	N2 %	+	
	REM %	-	+
	RL	+	-

SEDATIVES

A

W

2-BENZODIAZEPINES: TST

+

-

SL

-

+

SC

+

-

N1%

-

N2%

+

-

SWS%

-

+

REM%

-

+

RL

+

-

SEDATIVES

A

W

3-ZOLPIDEM: SL

-

SC

+

SWS%

+

4-CHLORAL HYDRATE: TST

+

SL

-

SC

-

LITHIUM

A

W

- DAYTIME SOMNOLENCE +
- TST +
- N1% -
- N2% +
- SWS% +
- REM% -
- RL +

ANTIPSYCHOTICS

A

W

- HALDOL, ZYPREXA, RESPERIDONE, GEODONE, ABILIFY, REGLAN AND CHLORPROMAZINE.
- TST + -
- SL - +
- SC +
- N1% -
- N2% +
- REM% -
- RL - +

STIMULANTS

A

W

1-AMPHETAMINES: (METHAMPHETAMINE)

TST -

SC +

REM% -

RL +

2-COCAINE: TST -

3-PEMOLINE: TST -

SC -

SWS% -

REM% -

STIMULANTS

A

W

4-METHYLPHENIDATE: TST

-

SC

-

N1%

+

N2%

-

REM%

-

RL

+

5-XANTHINES: (THEOPHYLLINE, CAFFEINE)

SL

+

SC

-

N1%

+

MISCELLANEOUS

A

W

- OPIATES (CODEINE, PERCOCET)

TST

-

SC

-

REM%

-

+

- CORTICOSTEROIDS (PREDNISONONE)

N2%

+

REM%

-

- DOPAMINE AGONIST (L-DOPA)

RL

+

- NICOTINE

TST

-

SL

+

SC

-

-

REM%

-

“ASSOCIATIONS BETWEEN THE USE OF COMMON MEDICATIONS AND SLEEP ARCHITECTURE IN PATIENTS WITH UNTREATED OSA”

- LITTLE IS KNOWN ABOUT THE EXTENT TO WHICH MEDICATIONS ARE USED IN OSA PATIENTS OR THE EFFECTS OF COMMON MEDICATIONS ON SLEEP ARCHITECTURE OF PATIENTS WITH OSA.
- CONCLUSIONS: MEDICATIONS USE WAS HIGH WITHIN PATIENTS WITH OSA. TCA, SSRI AND ANXIOLYTICS WERE ASSOCIATED WITH WITH A LOWER REM SLEEP AND LOWER SLEEP EFFICIENCY IN THIS SAMPLE. B-BLOCKING AGENTS AND ASA HAD NO CONSISTENT ASSOCIATIONS WITH INDEXES OF SLEEP ARCHITECTURE.

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ESZOPICLONE IMPROVES OVERNIGHT POLYSOMNOGRAPHY AND CONTINUOUS POSITIVE AIRWAY PRESSURE TITRATION

- PROSPECTIVE, RANDOMIZED, PLACEBO-CONTROLLED TRIAL.
- TO ASSESS WHETHER PREMEDICATION WITH ESZOPICLONE WOULD IMPROVE SLEEP DURATION AND CONTINUITY DURING PSG, THEREBY IMPROVING THE QUALITY OF DIAGNOSTIC AND CPAP TITRATION STUDIES.
- CONCLUSION: PRETREATMENT WITH ESZOPICLONE IMPROVES THE QUALITY OF PSG AND CPAP TITRATION AND DECREASE THE NEED TO REPEAT STUDIES. GIVEN THE EVER-GROWING DEMAND FOR PSG AND THE NEED TO IMPROVE EFFICIENCY, THE ROUTINE USE OF NONBENZODIAZEPINES AS PREMEDICATION FOR PSG SHOULD BE CONSIDERED.

TAKE HOME MESSAGE

- “THE MAJORITY OF TREATMENTS FOR SLEEP DISORDERS BEGINS WITH A PSG, WHICH MUST BE READ ACCURATELY BY BOTH THE TECHNOLOGIST AND PHYSICIAN. KNOWING A PATIENT’S MEDICATIONS HISTORY AND APPLYING THAT KNOWLEDGE TO THE INTERPRETATION OF DATA, IS A CRUCIAL STEP”

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