

Patient: LISA KNIGHT
Unit Record # 2942227
Study Date: 22/08/2024
Date of Birth: 6/12/1977
Weight: 79kg

Physician: Dr A Chazan
Recording Site: Camberwell
Gender: Female
Height: 158cm
BMI: 31.6kg/m²

DIAGNOSTIC SLEEP STUDY

Study indications: Severe sleepiness, home study showed only mild OSA. Query hypersomnolence, narcolepsy.
Study notes: MSLT to follow.

Sleep architecture: The total sleep time was 427.5 minutes (91.6% NREM / 8.4% REM). The sleep latency was 13.0 minutes, whilst a REM sleep latency of 204.0 minutes was observed. The wake time after sleep onset was 57.0 minutes, leading to a sleep efficiency of 87.3%. There were two periods of REM, neither occurred whilst supine. Slow wave sleep comprised 42.0% of the total sleep time. The number of awakenings after sleep onset was 26 and the number of sleep stage shifts was 264. The patient spent 0.0 minutes (0.0% of total sleep time) in the supine position. Sleep was self-assessed as the same as usual. Patient perceived sleep latency was approximately 30 minutes, which was less time compared to usual. Patient believed that total sleep was 8 hours. In the morning they felt sleepy, but with no effort to keep awake.

Cortical Arousals: Respiratory arousal index = 4.4, Limb Movement arousal index = 3.6, Spontaneous arousal index = 13.3, Total arousal index = 21.3

Respiratory Events: Overall, infrequent respiratory events were observed. Infrequent respiratory events were observed during lateral NREM and minimal respiratory events were noted during lateral REM. Scored events were primarily hypopnoeic in type. NREM AHI = 5.7/hr, REM AHI = 1.7/hr. **Total AHI = 5.3/hr** (Total RDI = 6.2/hr). The AHI events were associated with an average oxygen desaturation of 3%. The ODI_{≥3%} and ODI_{≥4%} were 0.6/hr and 0.0/hr respectively. The baseline saturation during sleep was 97%. The lowest oxygen saturation in sleep was 94% (NREM = 94%, REM = 96%) and the oxygen saturation was beneath 89% for 0.0 minutes (0.0% of TST). Occasional mild snoring (ave level = 42.0dB, max level = 55.6dB) with an index of 18.9/hr was present.

Movement Events: There were moderately frequent PLM's observed. REM PLM Index = 26.7/hr, NREM PLM Index = 9.0/hr, TST PLM Index = 10.5/hr. Other leg movements were moderately frequent. There were no episodes of bruxism observed. Bruxism Index = 0.0/hr.

ECG Rhythm: Intermittent ectopic beats were noted. Average heart rate = 68 bpm (Maximum = 91 bpm / Minimum = 55 bpm)

Epworth Sleepiness Score: 14 (mild-moderate range)

Blood Pressure (Before & After Study): 145/80mmHg & 115/65mmHg

Robert Giles
Sleep Scientist
Analysis date: 23/08/2024

Conclusion:

There was a normal sleep latency and normal sleep efficiency. Sleep architecture was moderately fragmented and REM sleep was reduced. Occasional soft snoring was heard. Only rare obstructive hypopnoeas occurred during NREM and REM sleep and caused minimal oxygen desaturations. The total AHI was 5/hr. An elevated number of periodic leg movements occurred and contributed to sleep fragmentation. ECG showed sinus rhythm with occasional ventricular ectopic beats. Total sleep time was 428 mins prior to MSLT.

Dr Adrian Chazan
Respiratory & Sleep Physician

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DIAGNOSTIC SLEEP STUDY

SLEEP STATISTICS

Report time from 21:17:05 to 06:41:04	= 564.0 min	
Time available for sleep (lights out)	= 489.5 min	
Sleep latency	= 13.0 min	
REM latency	= 204.0 min	
Sleep period from 22:36:35 to 06:41:04	= 484.5 min	
Total time awake during sleep period	= 57.0 min	
Stage N1 = 53.0 min (12.4% of TST)	= 427.5 min	
Stage N2 = 159.0 min (37.2% of TST)	NREM Sleep = 391.5 min	(91.6% of TST)
Stage N3 = 179.5 min (42.0% of TST)	REM Sleep = 36.0 min	(8.4% of TST)
	Sleep Efficiency	= 87.3%

RESPIRATORY AND SpO₂ STATISTICS

	Supine	NREM Other	All	Supine	REM Other	All	Supine	TST Other	All
SpO ₂ % min average	-	97	97	-	97	97	-	97	97
SpO ₂ % lowest	-	94	94	-	96	96	-	94	94
Body Posn (mins – time spent)	0	391	391	0	36	36	0	427	427
AHI / RDI									
Central Apnoea	0.0	1.2	1.2	0.0	0.0	0.0	0.0	1.1	1.1
Obstructive Apnoea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mixed Apnoea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hypopnoea	0.0	4.4	4.4	0.0	1.7	1.7	0.0	4.2	4.2
Apnoea + Hypopnoea (AHI)	0.0	5.7	5.7	0.0	1.7	1.7	0.0	5.3	5.3
RERA	-	0.9	0.9	-	0.0	0.0	-	0.8	0.8
AHI + RERA (RDI)	-	6.6	6.6	-	1.7	1.7	-	6.2	6.2

TST	Average duration (sec)	Total duration (min)	Total Scored	Per hour
Central Apnoea	12	1	8	1.1
Obstructive Apnoea	0	0	0	0.0
Mixed Apnoea	0	0	0	0.0
Hypopnoea	16	7	30	4.2
RERA	17.5	0:01:45	6	0.8
Apnoea + Hypopnoea	15	9	38	5.3
Total AHI	5.3/hr	Total RDI	6.2/hr	
Oxygen Desaturation Index ≥ 3%	0.6/hr	Oxygen Desaturation Index ≥ 4%	0.0/hr	
SpO ₂ awake average	=97%	Mean Apnoea / Hypopnoea duration	=15 sec	
Average SpO ₂ desaturation	=3%	Longest Apnoea / Hypopnoea	=14 / 28 sec	

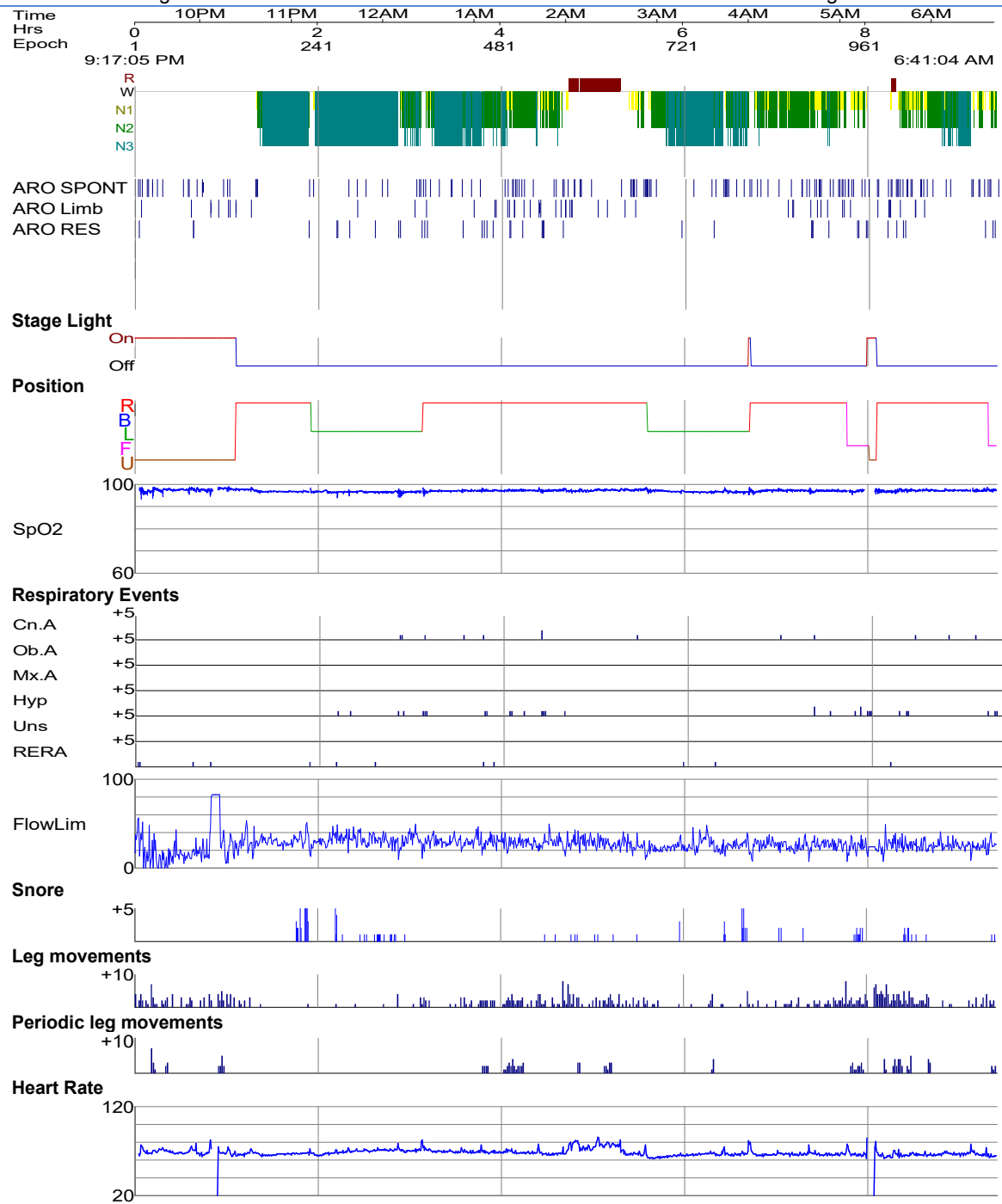
PLM / LM STATISTICS

Number of PLM's /hr (Wake)	= 9.4	Number of Limb Movements /hr (Wake)	= 88.3
Number of PLM's /hr (NREM)	= 9.0	Number of Limb Movements /hr (NREM)	= 25.4
Number of PLM's /hr (REM)	= 26.7	Number of Limb Movements /hr (REM)	= 73.3
Number of PLM's /hr (TST)	= 10.5	Number of Limb Movements /hr (TST)	= 29.5

AROUSAL STATISTICS

	Other	REM	NREM	TST
Per hour				
Spontaneous	0.3	13.3	13.3	13.3
Limb	0.4	5.0	3.5	3.6
Respiratory	0.3	1.7	4.6	4.4
Total				21.3/hr

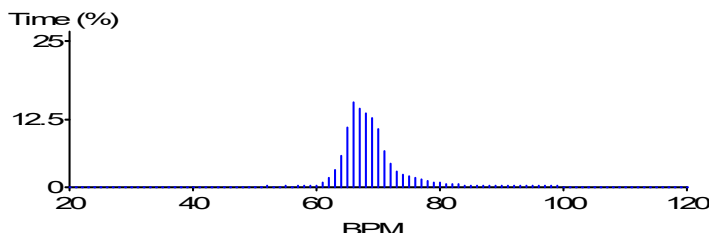
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Unit Record #	2942227	Recording Site:	Camberwell
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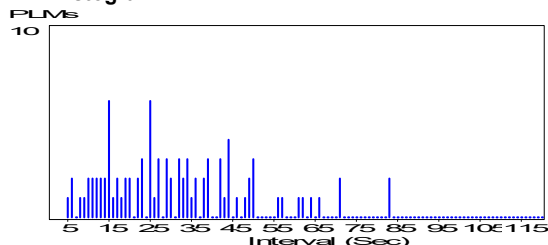
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Heart Rate Histogram



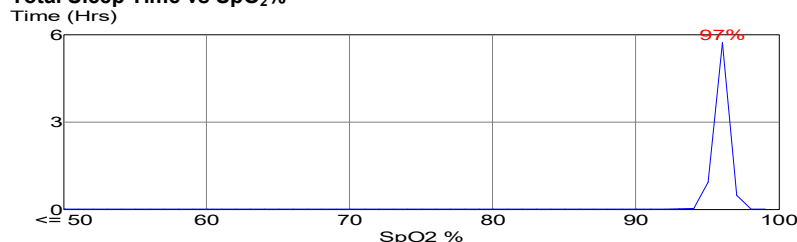
BPM	%
120-111	0
110-101	0
100-91	0.16
90-81	1.77
80-71	19.7
70-61	76
60-51	0.32
50-41	0
40-31	0
30-21	0

PLM Histogram



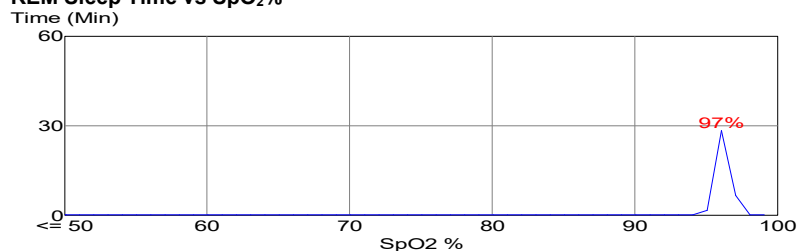
Interval (Sec)	no	Interval (Sec)	no
5-9	5	60-64	3
10-14	10	65-69	1
15-19	12	70-74	2
20-24	7	75-79	0
25-29	13	80-84	2
30-34	10	85-89	0
35-39	8	90-94	0
40-44	8	95-99	0
45-49	4	100-104	0
50-54	3	105-109	0
55-59	2	110-114	0
60-64	3	115-120	0

Total Sleep Time vs SpO₂%



SpO2	Time
91-100	7.09
81-90	0
71-80	0
61-70	0
51-60	0
<= 50	0

REM Sleep Time vs SpO₂%



SpO2	Time
91-100	36
81-90	0
71-80	0
61-70	0
51-60	0
<= 50	0

Glossary of Terms

Hypopnoea: ≥10 seconds duration, nasal pressure signal excursions drop by ≥ 30% of baseline and in association with either cortical arousal or ≥ 3% desaturation.

Obstructive Apnoea: ≥10 seconds duration, Thermistor signal excursions drop by ≥ 90% of baseline, continued Respiratory Effort.

Central Apnoea: ≥10 seconds duration, Thermistor signal excursions drop by ≥ 90% of baseline, nil Respiratory Effort.

Mixed Apnoea: ≥10 seconds duration, Thermistor signal excursions drop by ≥ 90% of baseline, nil Respiratory Effort for ≥ 5 seconds followed by continued Respiratory Effort.

RERA (Respiratory Effort-Related Arousal): ≥10 seconds duration, increasing respiratory effort or flattening of nasal pressure signal leading to cortical arousal.

AHI (Apnoea-Hypopnoea Index): Sum of respiratory events divided by **total sleep time (TST)**, expressed per hour.

Cortical Arousal: An abrupt shift in EEG frequency ≥ 3sec, with ≥ 10 seconds of stable sleep preceding the change. Arousals during REM require a concurrent increase in facial EMG for ≥ 1 second.

PLMs (Periodic Leg Movements): Repetitive rhythmical kicking of legs (a 5-90 sec periodicity) when asleep.

Sleep Bruxism: activity characterised by clenching or grinding of the teeth during sleep.