

“SLEEP PROPERLY, REDUCE INTAKE, AND GET STEPPING” (SPRINGS): A MULTIDISCIPLINARY APPROACH TO MANAGING PAEDIATRIC MORBID OBESITY WITH SEVERE OBSTRUCTIVE SLEEP APNOEA

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INTRODUCTION

- Paediatric morbid obesity (BMI >99.6th centile for age) causes severe obstructive sleep apnoea (OSA) requiring respiratory support.
- Prognosis is poor and requires urgent intervention^{1,2}.

AIM

- Assess outcome in 4 patients with morbid obesity and severe OSA admitted for multidisciplinary team (MDT) intensive weight management and continuous positive airway pressure (CPAP) initiation.

METHOD

- The patients (3 male, 1 female; ages 9-16 years) had BMIs >99.6th centile (>3 SDS). Two had developmental delay.
- 1 patient was taking metformin prior to admission, another taking orlistat was also commenced on liraglutide.
- Inpatient admission (10-33 days), all families received specialist input from obesity and respiratory MDTs including clinical nurse specialists, dietetics, and a psychologist.
- All patients had overnight sleep studies performed due to clinical concerns of OSA.
- Patients all given a calorie-restricted diet and personalised exercise plans with target goals set by the MDT and families in collaboration

RESULTS

- All had severe obstructive sleep apnoea (e.g. figure 1) (median oxygen desaturation index (ODI): 36.5 events/hour; range: 34-98) and low minimum oxygen saturations (median: 73.5%; range 39-80%).
- All patients successfully lost weight during the admission, and continued the trajectory at 3-, 6- and 12-months following discharge with marked reduction in BMI SDS (table 1 and figure 2).
- All successfully initiated on overnight CPAP in hospital and have continued.
- Sleep parameters rapidly improved in all following CPAP initiation; including a reduction in ODI (median ODI: 13.9 events/hour; range: 9.7-14.3) and reduction in median minimum oxygen saturations (median: 80.5%; range: 77-85%).

Figure 1. Sleep study for patient B demonstrating obstructive sleep apnoea

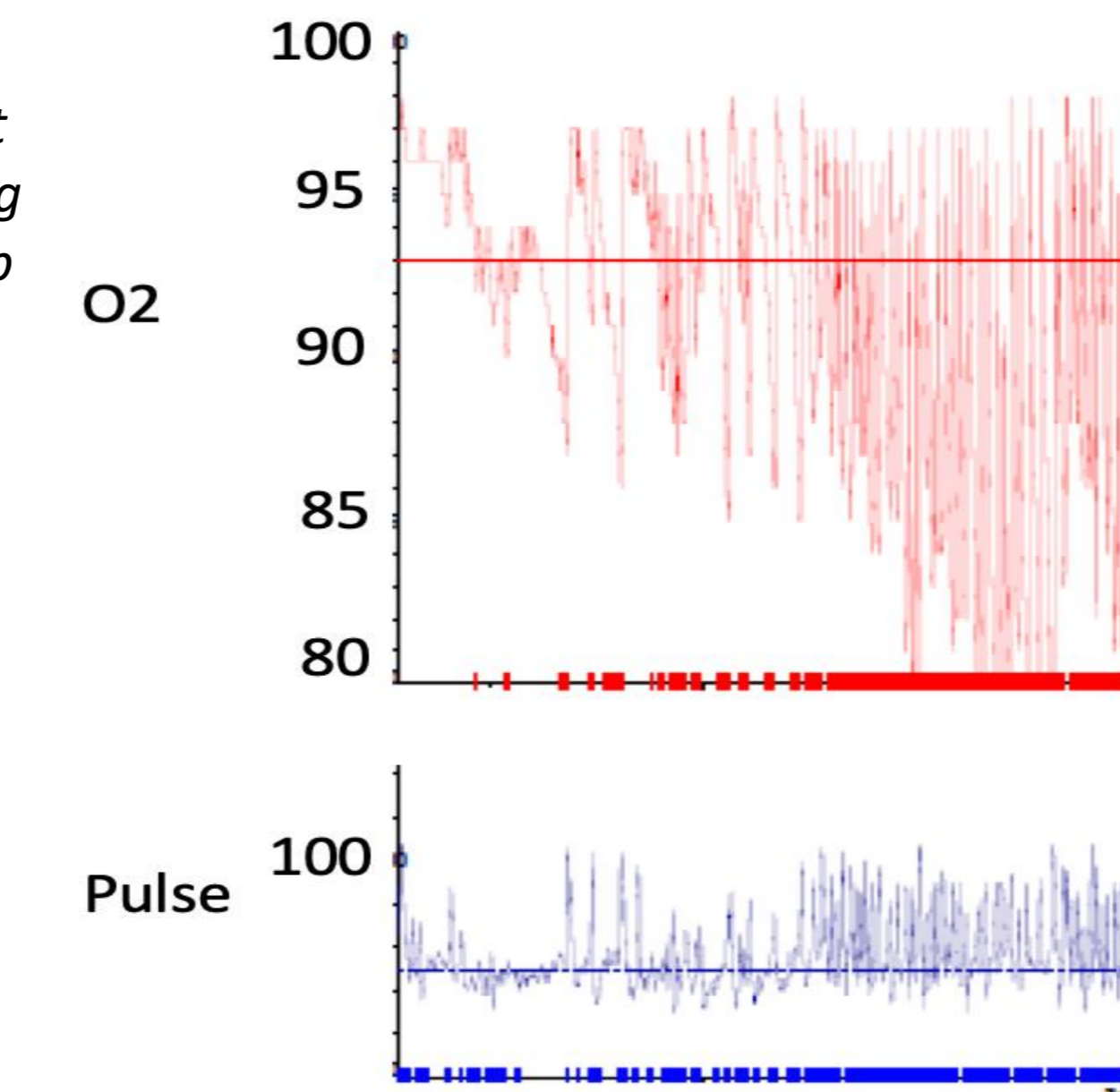


Figure 2. BMI charts showing change in BMI following admission and commencement of overnight CPAP.

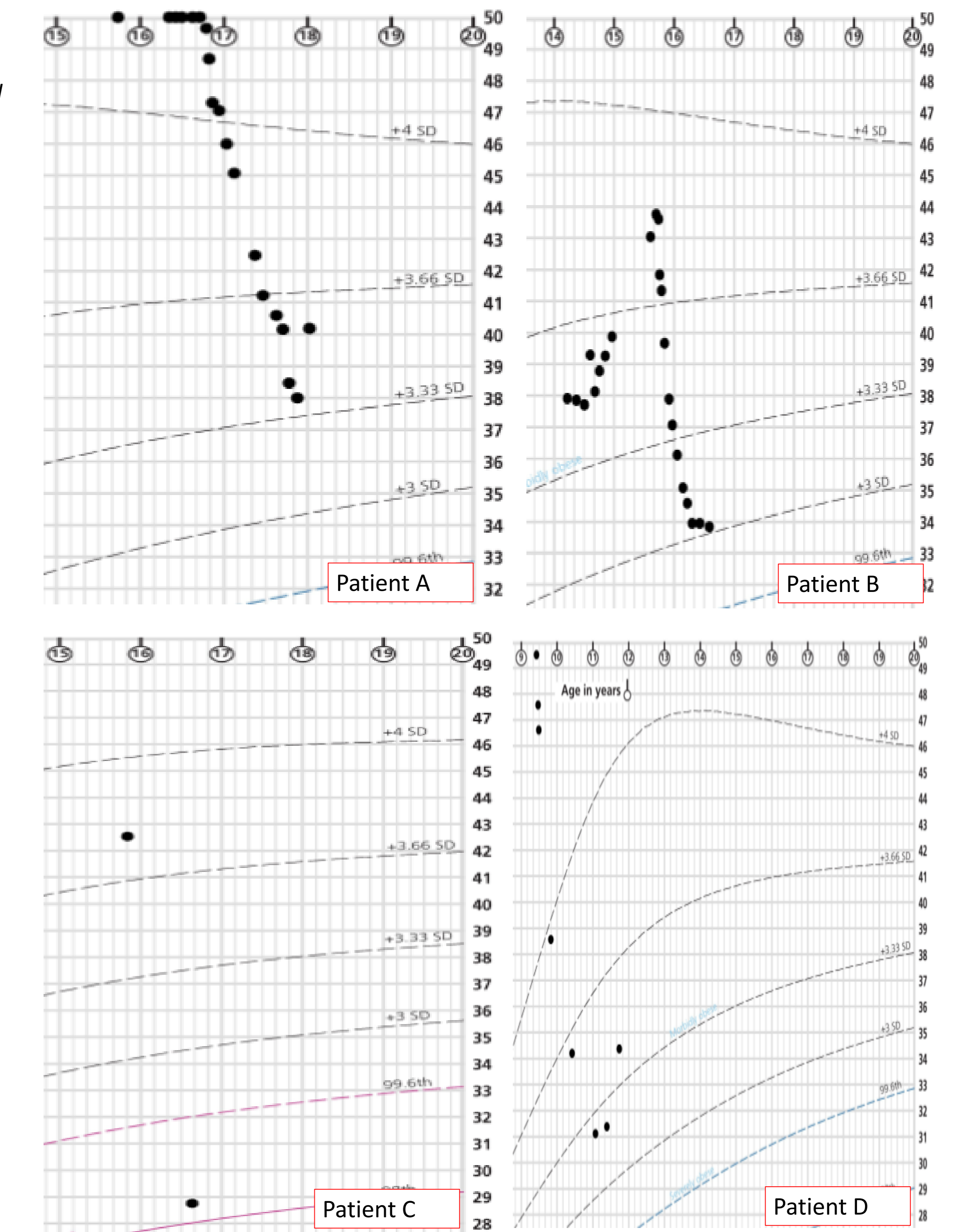


Table 1. Weight loss and BMI change at 3-, 6- and 12- months following discharge

	PATIENT				
	A	B	C	D	
Admission weight (kg)	184.5	86	155.8	83.4	
BMI-SDS	4.36	4.48	3.83	3.80	
Weight loss (kg)	<i>At Discharge</i>	-4.9	-8.4	-7.6	-3.4
	<i>3 months</i>	-14.5	-14.7	-20.4	-10.7
	<i>6 months</i>	-29.5	-20.0	-29.6	-14.4
	<i>12 months</i>	-45.3	-23.0		
BMI-SDS change	<i>At Discharge</i>	-0.05	-0.15	-0.13	-0.13
	<i>3 months</i>	-0.14	-0.36	-0.41	-0.44
	<i>6 months</i>	-0.34	-0.54	-0.71	-0.70
	<i>12 months</i>	-0.62	-0.88		

CONCLUSIONS

- The mechanisms for weight loss may be due to a range of factors, including a lifestyle shift following an intensive MDT intervention, improved sleep quality through CPAP enhancing weight loss and medication for weight reduction.
- This approach may benefit a range of patients with morbid obesity and severe OSA.

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