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Reversal of Bradycardia through Nutritional Rehabilitation in Paediatric Anorexia Nervosa: A Retrospective Study from Qatar

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ABSTRACT

Background

Anorexia nervosa (AN) is a severe mental health disorder characterized by persistent energy intake restriction, intense fear of weight gain, and a distorted body image. AN affects nearly every organ system, with the cardiovascular system being affected in up to 80% of cases [1]. AN carries the highest mortality among psychiatric disorders, with sudden cardiac death as a major cause [2]. Bradycardia is the most common cardiovascular manifestation in AN.1 Nutritional rehabilitation reverses these abnormalities, but rapid weight gain can pose risks such as electrolyte imbalance and arrhythmias. Early detection and monitoring of bradycardia are therefore crucial [3].

Methods

We conducted a retrospective cohort study using data from Sidra Medicine and Hamad General Hospital in Qatar. Patients admitted between December 2016 and June 2024 with AN and bradycardia (Heart Rate (HR) <60 beats per minute (bpm)) were included. Patients with incomplete records were excluded. Ethical approval was obtained from the institutional review board of Sidra Medicine (IRB 1929504). Data were extracted and analyzed by independent reviewers.

Results

Of 222 screened patients (aged 10–18 years), 46 met the inclusion criteria. The majority were female (91.3%), with a mean age of onset at 14 years and a percentile of median BMI for age (%mBMI) of 9.1% (z-score -2.36) **(Table 1)**. The average admission HR was 49.96bpm, confirming bradycardia as a frequent complication. All patients underwent nutritional rehabilitation with caloric intake starting from around 1200kCal/day and increasing by 200kCal/day/day. At 1–2 weeks follow-up, the mean HR improved significantly to 78.63bpm **(Table 1)**. **Figure 1** shows the correlation between %mBMI and the change in HR (R2=0.07, p=0.133).

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Conclusion

This study highlights the burden of bradycardia among adolescents with AN in Qatar. Nutritional rehabilitation was effective in restoring HR, emphasizing the need for early recognition and careful monitoring. Future studies with larger sample size are needed to validate these findings and improve generalizability.

Keywords

Anorexia Nervosa, Bradycardia, Nutritional Rehabilitation, Eating Disorder(s), Qatar

TABLE 1 - Baseline characteristics, nutritional rehabilitation, and hospital course of the study population

Baseline Characteristics of Study Population	
Characteristics	**Value**
Number of patients	46
Median age at admission, years	14
BMI at admission, kg/m^2	15.56
%mBMI at admission (z-score)	9.1 (-2.36)
AN subtype: Restricting, %	89.1
AN subtype: Binge/Purge, %	10.9
Heart rate at admission, bpm	49.96
Severe bradycardia (<40 bpm), %(n)	3 (6)
Lowest recorded HR, bpm	37
Nutrition Rehabilitation and Hospital Course	
Parameter	**Value**
Median initial caloric prescription, kcal/day (range)	1150 (700-1500)
Daily caloric increase, kcal	200 if tolerated
Median caloric intake at discharge, kcal/day (range)	2500 (1500-4000)
Duration of hospitalization, days (mean)	38
%mBMI at discharge (z-score)	23.7 (-0.95)
%mBMI change during stay	14.6
Heart rate at discharge, bpm (±SD)	78.63
Improvement in heart rate	28.67

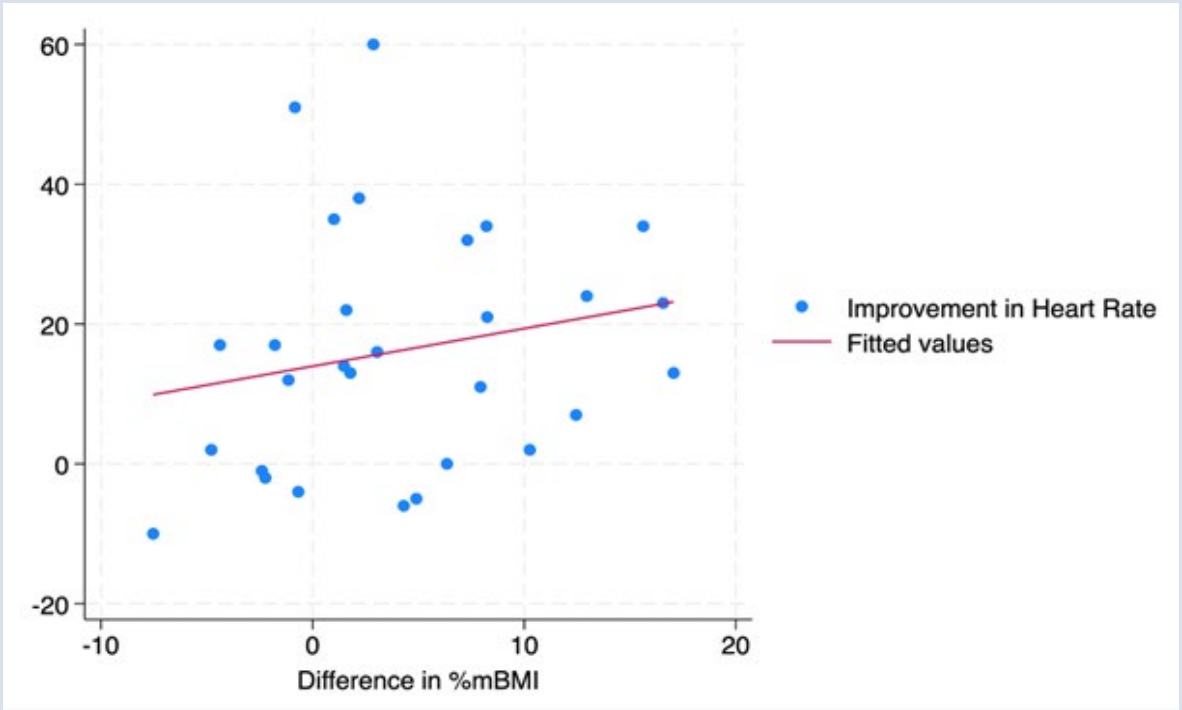

FIGURE 1 - Scatter plot showing the relationship between heart rate change and percentile of median BMI for age (%mBMI) difference (R2 = 0.07, p = 0.133)

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Author contributions

All authors contributed equally and validated the final version of record.

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Declarations

Conflicts Of Interests

The Authors declare that there is no conflict of interest.

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Registration

No registration applicable.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethical approval

This study was approved by the Institutional Review Board of Sidra Medicine (1929504).

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