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Background

- Cancer-Related Fatigue (CRF) is a common, high-impact symptom
- Pathophysiology poorly understood
- Hypothesis: Cardiovascular autonomic nervous system (CV ANS) dysfunction contributes to CRF
- Heart rate variability (HRV) is a non-invasive method of measuring CV ANS function
- HRV reported as root mean square of successive differences (RMSSD) and standard deviation of the NN (R-R) intervals (SDNN).
- SDNN represents total variability - lower numbers indicate loss of dynamic response

Aim

Investigate CRF and CV ANS function in solid tumours

Methods

- Prospective observational study
- Consecutive, treatment naïve, oncology outpatients
- Exclusion: previous cancer, known cardiovascular disease
- Participants identified as 'fatigued' based on brief fatigue inventory (BFI) score of ≥ 3

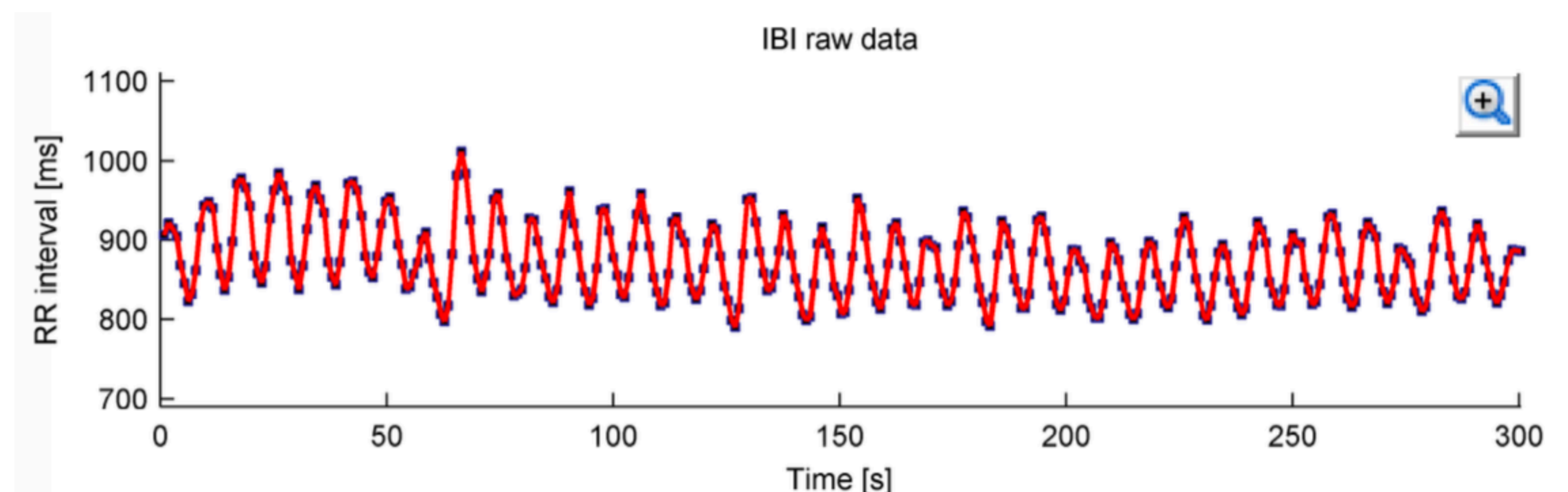
Outcome Measures

FATIGUE

- BFI
- Hand grip strength
- Timed Up and Go (TUG)
- Sit to Stand (STS)

CV ANS FUNCTION

- HRV
 - 5 mins spontaneous breathing
 - 5 mins paced breathing



Sample HRV Analysis

Results

N=10; 6♀

Age: Median 54 (range 40-73)

Cancer type:

- Breast 6
- Oesophageal 4

Loco-regional disease: 3

BFI: Median 1.25 (range 0-5.9)

BFI ≥ 3 : 3/10 (30%)

	Fatigued Median (range) N=3	Non-Fatigued Median (range) N=7
Grip strength (kg force)	23 (18-33)	35 (14-48)
TUG (s)	8 (7-8)	7 (6-9)
STS (number in 30s)	13 (9-16)	13 (11-18)
RMSSD, spontaneous	16 (6-25)	18 (11-79)
RMSSD, paced	18 (8-71)	23 (17-86)
SDNN, spontaneous	22 (18-27)	30 (17-124)
SDNN, paced	30 (17-96)	45 (28-121)

Conclusions

- Significant proportion fatigued pre-treatment
- Indicators of CV ANS dysfunction present:
 - Lower SDNN in fatigued participants
- Feasible study; tests well tolerated

