A NOVEL MEASURE FOR PECTUS EXCAVATUM: THE CORRECTION INDEX

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The Haller Index (HI) is the standard metric to evaluate the severity of pectus excavatum.

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\text{Haller Index} = \frac{190.3}{69.8} = 2.73
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Over 2 decades ago, an HI over 3.25 was proposed as a marker for disease. This was based on 19 control patients compared to 33 pectus patients who underwent repair. The concern we have for the HI is that the equation depends on width.
The Correction Index

The correction index (CI) measures the depression of the sternum relative to the anterior chest.

Correction Index = (90.3 - 69.8) \times 100 = 22.7
METHODS

- Utilized the patients from our pectus excavatum dataset who had a preoperative thoracic CT available for review.
- We identified 220 control patients who had a thoracic CT obtained for an alternative indication:
  - 10 males and 10 females in each year of age between 8 and 18.
- Haller index and correction index were calculated on every patient.
RESULTS

- Mean age of pectus patients = 14.0 +/- 3.0 years
- Mean age of controls = 13.5 +/- 3.5 years

**Haller Index**

- Control Mean HI = 2.35 +/- 0.33
- Pectus Mean HI = 4.06 +/- 1.10

**Correction Index**

- Pectus mean CI = 31.75 +/- 10.66
- Control mean CI = 0.92 +/- 1.35
RESULTS

Overlap between disease and control includes 47.8% of the pectus patients.

There are 49 pectus patients (19%) with HI less than 3.2.
RESULTS

No overlap between pectus and control patient
RESULTS

Haller Index

# patients

Control Patients

Pectus Patients

Haller Index

0

10

20

30

40

1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0
Haller Index = 233.7/62.8 = 3.72

NORMAL CONTROL
PECTUS PATIENT

Haller Index = 213.5/99.1 = 2.15
PECTUS PATIENT

Correction Index = \(\frac{118.0 - 99.1}{118.0} \times 100 = 16.0\)
CONCLUSIONS

- The HI demonstrates dramatic overlap between pectus patients and normal controls.
- There is no overlap in the CI where a CI of 10.0 represents a 10% defect in the chest.
- CI of 10.0 also means 10% of the chest depth will be regained by bar placement.
- The CI is a more accurate measure of the depth of chest defect in patients with pectus excavatum.