

Supplementary File S2 - Statistical output

Diagnostic performance of the neutrophil-to-lymphocyte ratio in fibrotic chronic hepatitis C
Cellular Physiology and Biochemistry — Alnaqqash, Ayadi and Hasan

Verbatim console output produced by Supplementary Code S3 when run against Supplementary Data S1.

Command: python Supplementary_Code_S3_analysis.py Supplementary_Data_S1.csv

Every value reported in the manuscript can be located in this listing. Section 2 corresponds to the primary analysis, Section 3 to the sensitivity analysis of Section 3.9 and Table 9 of the manuscript, and Section 4 to the comparator markers of Table 7.

```
recorded vs recomputed nlr: max absolute difference = 0.0050 -> using recorded values
recorded vs recomputed homa_ir: max absolute difference = 0.0094 -> using recorded values
```

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SUPPLEMENTARY CODE S3 - reproduction of reported analyses
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```

```
file           : Supplementary_Data_S1.csv
participants    : 150
missing values  : 0
```

```
groups         : {'control': 50, 'CHC-IR': 50, 'CHC+IR': 50}
```

```
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1. CLASSIFICATION OF INSULIN RESISTANCE
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```

```
a priori threshold: HOMA-IR >= 2.6
clinical allocation reproduced in 149 of 150 (99.3 %)
```

```
discordant participants (these drive the sensitivity analysis):
```

```
study_id group insulin glucose homa_ir nlr
ID-127 CHC+IR 10.6600 98.6000 2.5900 2.2800
```

```
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2. PRIMARY ANALYSIS (clinical allocation retained)
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```

```
NLR, insulin-resistant      n = 50 mean +/- SD = 2.53 +/- 0.15 range 2.24-2.80
NLR, non-insulin-resistant  n = 50 mean +/- SD = 1.95 +/- 0.13 range 1.62-2.22
Welch t = 20.69, p = 3.61e-37 (Welch F = 428.2)
```

```
ROC: NLR for insulin resistance within CHC
```

```
n = 100 (positive 50, negative 50)
AUC = 1.0000
DeLong variance = 0.000e+00 -> zero: complete separation, CI not estimable
95 % CI = not estimable
complete separation of the two classes: YES
Youden-optimal threshold = 2.24 (J = 1.0000)
sensitivity = 100.0 % (92.9-100.0) [50 of 50]
specificity = 100.0 % (92.9-100.0) [50 of 50]
accuracy = 100.0 % (96.3-100.0)
class ranges: negative max = 2.22, positive min = 2.24
```

```
linear regression, B for NLR = 2.308 (95 % CI 2.079 to 2.537), p = 5.17e-36, R2 = 0.811
maximum-likelihood logistic regression: did NOT converge to finite estimates (max |beta| = 1616.6)
Firth penalised logistic regression, OR per 0.1 NLR = 11.87 (95 % profile penalised-likelihood CI 3.74 to 3527), penalised L
RT p = 9.23e-28
the upper limit is very wide because the data are separated or nearly so; only the lower limit is informative
```

```
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3. SENSITIVITY ANALYSIS (HOMA-IR >= 2.6 applied strictly)
-> transcribe these values into Section 3.9, Table 9 and the Abstract
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```

```
group sizes after reclassification: insulin-resistant n = 49, non-insulin-resistant n = 51
NLR, insulin-resistant      n = 49 mean +/- SD = 2.54 +/- 0.15 range 2.24-2.80
NLR, non-insulin-resistant  n = 51 mean +/- SD = 1.96 +/- 0.14 range 1.62-2.28
Welch t = 20.38, p = 8.63e-37 (Welch F = 415.5)
```

```
ROC: NLR for insulin resistance within CHC (strict)
```

```
n = 100 (positive 49, negative 51)
AUC = 0.9994
DeLong variance = 5.571e-07
95 % CI = 0.993-1.000
complete separation of the two classes: NO
Youden-optimal threshold = 2.24 (J = 0.9804)
sensitivity = 100.0 % (92.7-100.0) [49 of 49]
specificity = 98.0 % (89.7-99.7) [50 of 51]
accuracy = 99.0 % (94.6-99.8)
class ranges: negative max = 2.28, positive min = 2.24
```

```
linear regression, B for NLR = 2.308 (95 % CI 2.079 to 2.537), p = 5.17e-36, R2 = 0.811
maximum-likelihood logistic regression: did NOT converge to finite estimates (max |beta| = 1637.3)
Firth penalised logistic regression, OR per 0.1 NLR = 12.04 (95 % profile penalised-likelihood CI 3.81 to 7325), penalised L
```

RT p = 1.2e-27

the upper limit is very wide because the data are separated or nearly so; only the lower limit is informative

4. COMPARATOR MARKERS, PRIMARY ANALYSIS

CRP (mg/L)

n = 100 (positive 50, negative 50)
AUC = 1.0000
DeLong variance = 0.000e+00 -> zero: complete separation, CI not estimable
95 % CI = not estimable
complete separation of the two classes: YES
Youden-optimal threshold = 1.94 (J = 1.0000)
sensitivity = 100.0 % (92.9-100.0) [50 of 50]
specificity = 100.0 % (92.9-100.0) [50 of 50]
accuracy = 100.0 % (96.3-100.0)
class ranges: negative max = 1.18, positive min = 1.94

TNF-alpha (pg/mL)

n = 100 (positive 50, negative 50)
AUC = 1.0000
DeLong variance = 0.000e+00 -> zero: complete separation, CI not estimable
95 % CI = not estimable
complete separation of the two classes: YES
Youden-optimal threshold = 12.11 (J = 1.0000)
sensitivity = 100.0 % (92.9-100.0) [50 of 50]
specificity = 100.0 % (92.9-100.0) [50 of 50]
accuracy = 100.0 % (96.3-100.0)
class ranges: negative max = 9.38, positive min = 12.11

IL-6 (pg/mL)

n = 100 (positive 50, negative 50)
AUC = 0.9540
DeLong variance = 3.130e-04
95 % CI = 0.904-0.979
complete separation of the two classes: NO
Youden-optimal threshold = 48.53 (J = 0.8000)
sensitivity = 98.0 % (89.5-99.6) [49 of 50]
specificity = 82.0 % (69.2-90.2) [41 of 50]
accuracy = 90.0 % (82.6-94.5)
class ranges: negative max = 59.96, positive min = 47.45

GGT (U/L)

n = 100 (positive 50, negative 50)
AUC = 0.9474
DeLong variance = 4.493e-04
95 % CI = 0.887-0.976
complete separation of the two classes: NO
Youden-optimal threshold = 48.5 (J = 0.7600)
sensitivity = 84.0 % (71.5-91.7) [42 of 50]
specificity = 92.0 % (81.2-96.8) [46 of 50]
accuracy = 88.0 % (80.2-93.0)
class ranges: negative max = 52.4, positive min = 38.7

ALT (U/L)

n = 100 (positive 50, negative 50)
AUC = 0.9034
DeLong variance = 8.537e-04
95 % CI = 0.829-0.947
complete separation of the two classes: NO
Youden-optimal threshold = 43.9 (J = 0.7000)
sensitivity = 86.0 % (73.8-93.0) [43 of 50]
specificity = 84.0 % (71.5-91.7) [42 of 50]
accuracy = 85.0 % (76.7-90.7)
class ranges: negative max = 50.6, positive min = 39.5

Neutrophils (x10⁹/L)

n = 100 (positive 50, negative 50)
AUC = 0.8706
DeLong variance = 1.197e-03
95 % CI = 0.787-0.925
complete separation of the two classes: NO
Youden-optimal threshold = 4.86 (J = 0.6400)
sensitivity = 86.0 % (73.8-93.0) [43 of 50]
specificity = 78.0 % (64.8-87.2) [39 of 50]
accuracy = 82.0 % (73.3-88.3)
class ranges: negative max = 5.31, positive min = 4.37

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END
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