Statistics for NIA VRI

Using simulated data

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Contents

Table 1 - Baseline characteristics

Baseline characteristics

	VRI-negative	VRI-positive	VRI-treated	Overall
n	297	43	69	409
Age (median [IQR])	62.00 [51.00, 72.00]	61.00 [51.50, 68.50]	59.00 [45.00, 71.00]	61.00 [51.00, 71.00]
Gender = 1 (%)	152 (51.2)	21 (48.8)	28 (40.6)	201 (49.1)
Diagnosis (%)				
ICH	115 (38.7)	14 (32.6)	11 (15.9)	140 (34.2)
SAH, aneurysmal	101 (34.0)	21 (48.8)	47 (68.1)	169 (41.3)
SAH, other	18 (6.1)	3 (7.0)	4 (5.8)	25 (6.1)
TBI	63 (21.2)	5 (11.6)	7 (10.1)	75 (18.3)
Kraniotomi = 1 (%)	89 (30.0)	7 (16.3)	25 (36.2)	121 (29.6)
Kraniektomi = 1 (%)	14 (4.7)	4 (9.3)	4 (5.8)	22 (5.4)
Endovascular = 1 (%)	58 (19.5)	16 (37.2)	26 (37.7)	100 (24.4)
EVD.Bilateral = 1 (%)	46 (15.5)	7 (16.3)	5 (7.2)	58 (14.2)
EVD.replacement = 1 (%)	35 (11.8)	17 (39.5)	17 (24.6)	69 (16.9)
EVD.duration (median [IQR])	13.00 [7.00, 17.00]	19.00 [16.00, 22.00]	16.00 [14.00, 19.00]	15.00 [9.00, 19.00]
Time.to.Treatment (median [IQR])	NA [NA, NA]	11.00 [7.50, 13.00]	8.00 [6.00, 11.00]	9.00 [7.00, 12.00]
Treatment.duration (median [IQR])	NA [NA, NA]	7.00 [4.50, 10.00]	6.00 [4.00, 7.00]	6.00 [4.00, 8.00]
VRI.Gentamicin = 1 (%)	0 (0.0)	2 (4.7)	0 (0.0)	2 (0.5)
VRI.Vancomycin = 1 (%)	0 (0.0)	43 (100.0)	68 (98.6)	111 (27.1)
VRI.Other = 1 (%)	0 (0.0)	2 (4.7)	2 (2.9)	4 (1.0)
Shunt (%)				
Overflytning	3 (1.0)	0 (0.0)	1 (1.4)	4 (1.0)
Seponering	243 (81.8)	30 (69.8)	45 (65.2)	318 (77.8)
Shunt	51 (17.2)	13 (30.2)	23 (33.3)	87 (21.3)

Missing data: Time.to.Treatment: 72.6 %; Treatment.duration: 72.6 %

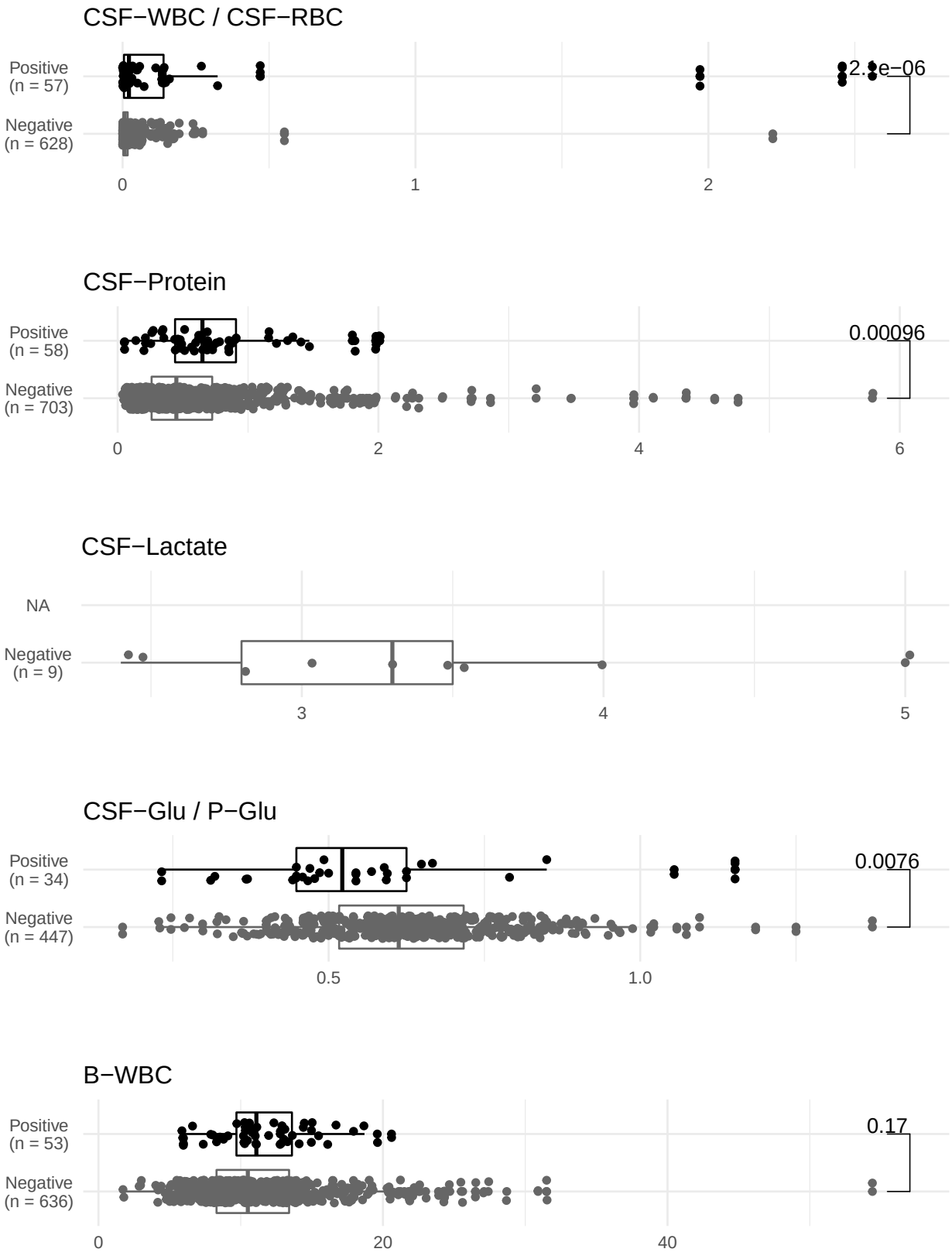
Table 2 - CSV characteristics

Baseline characteristics

	Negative	Negative, but let to treatment	Negative, but positive later	Positive	Overall
n	714	69	87	59	929
CSV.WBC (median [IQR])	65.00 [26.00, 176.50]	410.50 [153.75, 832.25]	89.00 [21.00, 276.00]	306.00 [90.00, 1257.50]	83.00 [30.00, 255.00]
CSV.RBC (median [IQR])	10200.00 [3200.00, 29775.00]	17700.00 [10425.00, 45650.00]	11750.00 [4450.00, 24400.00]	12400.00 [1800.00, 33900.00]	11400.00 [3600.00, 30300.00]
CSV.Glucose (median [IQR])	4.30 [3.70, 5.00]	4.50 [3.60, 5.40]	4.00 [3.40, 4.85]	3.70 [3.15, 5.15]	4.25 [3.60, 5.00]
CSV.Lactate (median [IQR])	3.30 [2.80, 3.50]	NA [NA, NA]	NA [NA, NA]	NA [NA, NA]	3.30 [2.80, 3.50]
Blood.CRP (median [IQR])	18.00 [7.00, 46.75]	16.00 [7.00, 52.00]	14.00 [5.00, 38.00]	14.00 [5.00, 29.00]	17.00 [7.00, 45.00]
Blood.PCT (median [IQR])	0.20 [0.15, 0.53]	0.15 [0.12, 0.40]	0.15 [0.15, 1.93]	NA [NA, NA]	0.20 [0.15, 0.54]

Missing data: CSV.WBC: 5.2 %; CSV.RBC: 8.2 %; CSV.Glucose: 0.5 %; CSV.Lactate: 99 %; Blood.CRP: 11.5 %; Blood.PCT: 95.2 %

Figure 1 - Biomarkers



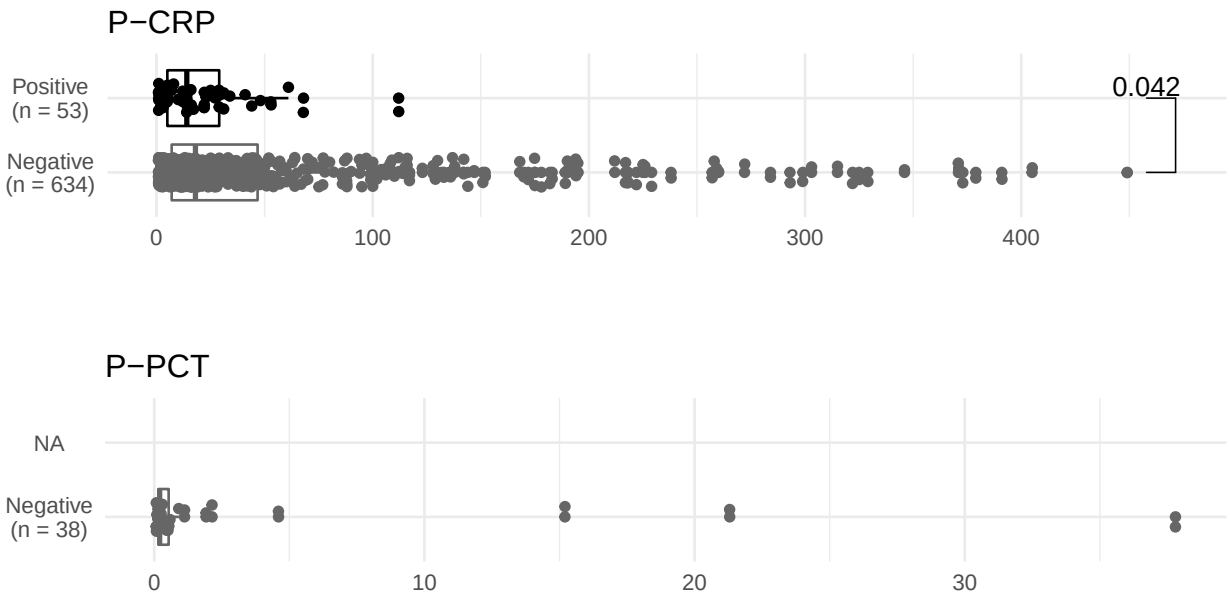

P−CRP
Positive
(n = 53)
Negative
(n = 634)
0.042
0
100
200
300
400
P−PCT
NA
Negative
(n = 38)
0
10
20
30

Table 3 - Rule out VRI

Variables	Sensitivity	Specificity	PPV	NPV
WBC/RBC ratio	0.44 (0.31-0.58)	0.88 (0.86-0.91)	0.26 (0.17-0.35)	0.95 (0.92-0.96)
CSF/plasma glucose ratio	0.71 (0.53-0.85)	0.55 (0.51-0.6)	0.11 (0.07-0.16)	0.96 (0.93-0.98)
CSF protein	0.64 (0.5-0.76)	0.57 (0.53-0.61)	0.11 (0.08-0.15)	0.95 (0.93-0.97)
High WBC/RBC ratio and high CSF protein and low glucose ratio	0.16 (0.07-0.29)	0.98 (0.97-0.99)	0.42 (0.2-0.67)	0.94 (0.92-0.96)
Low WBC/RBC ratio and low CSF protein and high glucose ratio	0.06 (0.01-0.16)	0.78 (0.75-0.82)	0.02 (0.01-0.07)	0.9 (0.87-0.93)

Appendix 1 - Uni- and multivariable logistic regression for prediction of 'Positive'-sample

Row.names	or_ci.x	p.x	or_ci.y	p.y
Age	1 [0.984;1.018]	0.959		
Blood.CRP	0.988 [0.976;0.996]	0.015	0.988 [0.975;0.997]	0.03
CSV.P.Glu.ratio	0.159 [0.016;1.406]	0.108		
CSV.WBC.RBC.ratio	16.448 [4.564;240.65]	0.004	9.975 [3.084;131.944]	0.009
Days.to.sample	1.013 [0.965;1.062]	0.59		