Effects of corticosteroids in patients with sickle cell disease and acute complications: a systematic review and meta-analysis

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Supplemental data: Effects of corticosteroids in patients with sickle cell disease and acute complications: a systematic review and meta-analysis

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METHOD

Data extraction

Two authors (JL and EB) independently checked titles and abstracts identified from the searches. We obtained the full text of all potentially relevant studies and the authors decided which trials fitted the inclusion criteria. If the two authors did not agree, the authors achieved consensus by discussion or adjudication by a third reviewer (AMD). Two authors (JL, EB) independently extracted data. The following data were recorded from each selected study: year of publication, study design, details on corticosteroids therapy, population characteristics (age, comorbidities, and diseases), rate of readmission, mean time to readmission, length of hospital stay, transfusion requirement, duration of analgesic therapy, number of opioids doses, incidence rate of oxygen therapy, duration of oxygen therapy. Missing data were requested from authors of identified studies when necessary

Supplemental table S*1*: Rate of severe ACS in retrospective trials

	Standard treatment group	Corticosteroids group	P value
Strouse 2008 [22], n (%)	8 (9)	11 (29)	0.01 [a]
Sobota 2009 [24], n (%)	755 (17)	276 (32)	< 0.001 [a]
Kumar 2010 [23], n (%)	1 (4)	21 (40)	0.001 [b]

Results are reported as number (percentage). Between-group comparisons were performed using Chi 2 test [a] and Fisher's exact test [b] when appropriate.

Abbreviations: **ACS**: Acute Chest syndrome

Supplemental table S*2*: Reasons for readmission in included studies

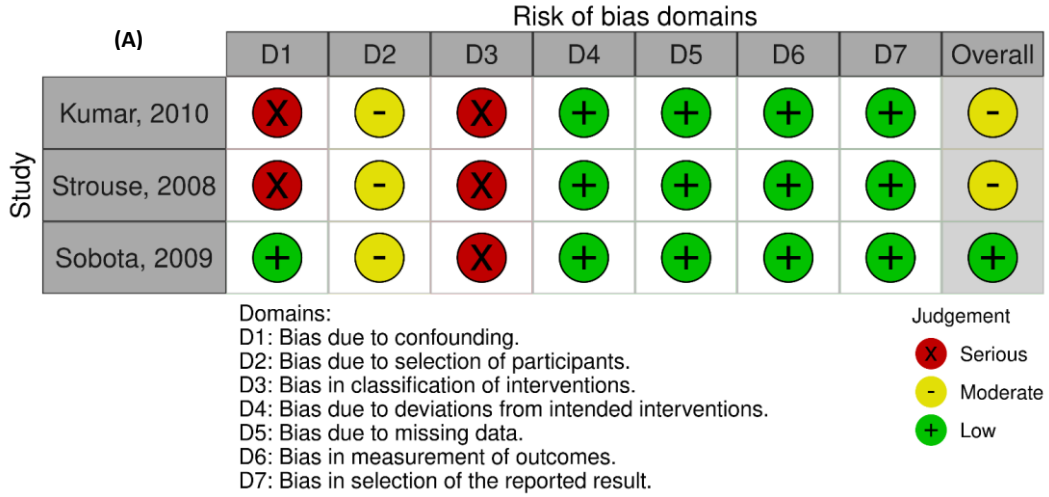
Trial, year	Reasons for readmission
Bernini, 1998 [20]	Painful crisis n=4 Stroke n=1* ACS n=1 Aplastic crisis n=1
Griffin, 1994 [19]	Painful crisis n=5
Quinn, 2011 [21]	Painful crisis n=1
Strouse, 2008 [22]	Painful crisis n=13 Painful crisis and fever n=3 ACS n=2 Hemorrhagic stroke n=2 ** NI n=2
Sobota, 2009 [24]	NI
Kumar, 2010 [23]	Painful crisis n=8 Hemolytic reaction n=1 Worsening ACS n=1

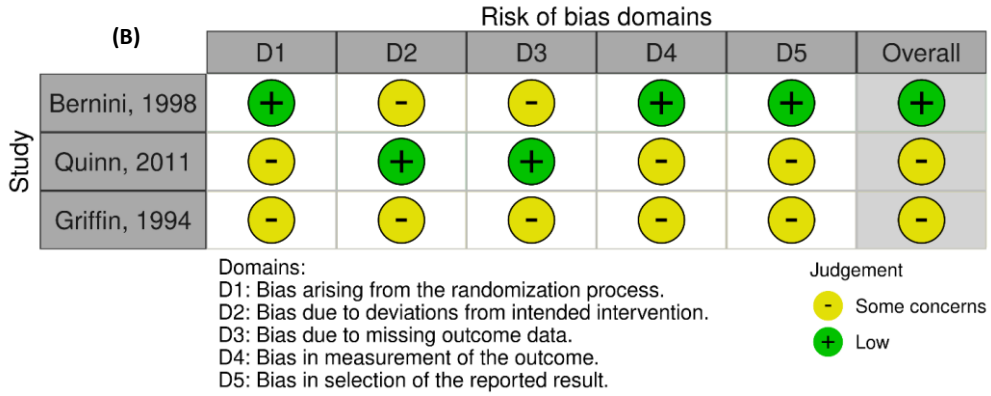
* Patient had received dexamethasone

** Both had received dexamethasone and transfusion

Abbreviations: NI: no information; **ACS:** acute chest syndrome

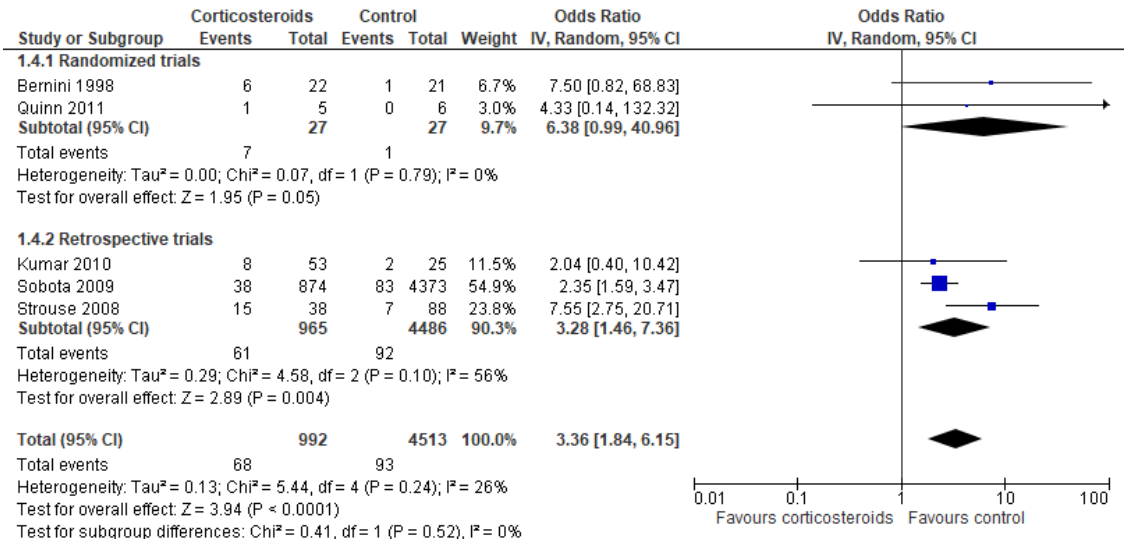
Supplementary figure S1: Risk of bias analysis for retrospective (A) and prospective (B) studies.



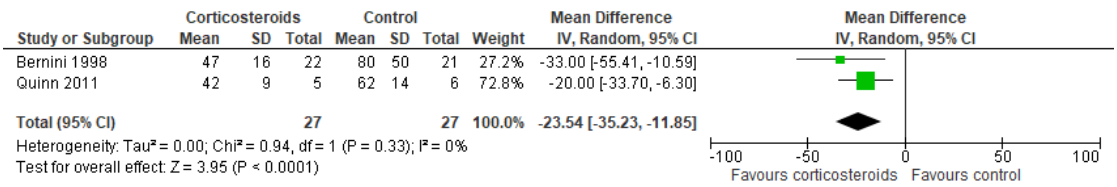


Supplementary figure S2: Sensitivity analysis of the effect of corticosteroids on readmission rate (A), length of stay (B) and transfusion requirement (C) in studies on acute chest syndrome

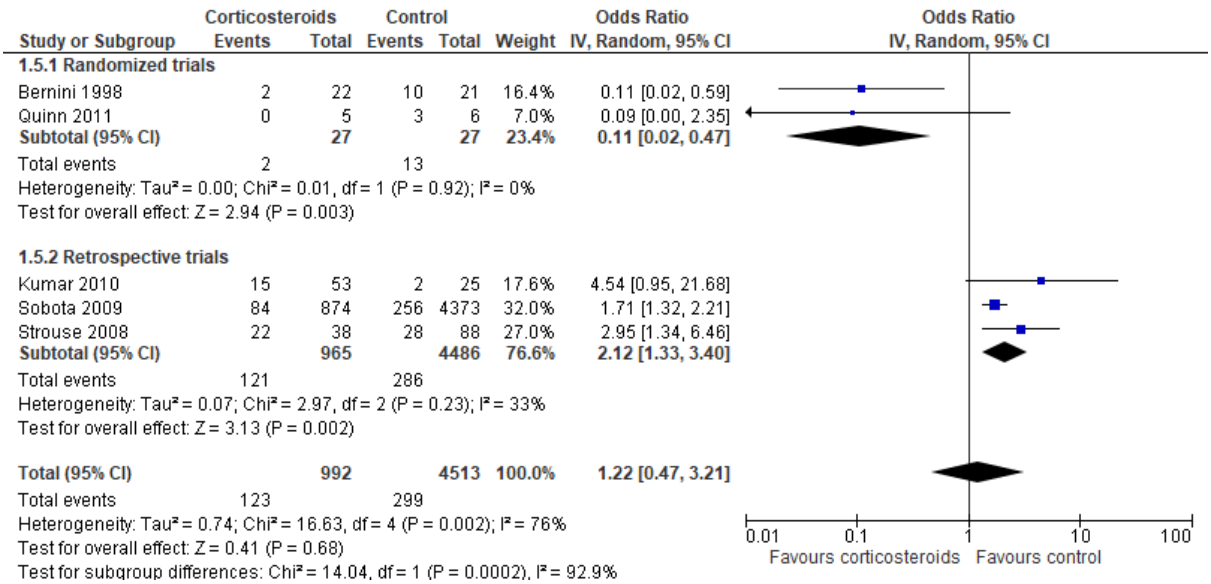
(A)



(B)



(C)


Corticosteroids
Control
Odds Ratio
Odds Ratio
Study or Subgroup Events Total Events Total Weight IV, Random, 95% CI
IV, Random, 95% CI
1.5.1 Randomized trials
Bernini 1998 2 22 10 21 16.4% 0.11 [0.02, 0.59]
Quinn 2011 0 5 3 6 7.0% 0.09 [0.00, 2.35]
Subtotal (95% CI) 27 27 23.4% 0.11 [0.02, 0.47]
Total events 2 13
Heterogeneity: Tau² = 0.00; Chi² = 0.01, df = 1 (P = 0.92); I² = 0%
Test for overall effect: Z = 2.94 (P = 0.003)
1.5.2 Retrospective trials
Kumar 2010 15 53 2 25 17.6% 4.54 [0.95, 21.68]
Sobota 2009 84 874 256 4373 32.0% 1.71 [1.32, 2.21]
Strouse 2008 22 38 28 88 27.0% 2.95 [1.34, 6.46]
Subtotal (95% CI) 965 4486 76.6% 2.12 [1.33, 3.40]
Total events 121 286
Heterogeneity: Tau² = 0.07; Chi² = 2.97, df = 2 (P = 0.23); I² = 33%
Test for overall effect: Z = 3.13 (P = 0.002)
Total (95% CI) 992 4513 100.0% 1.22 [0.47, 3.21]
Total events 123 299
Heterogeneity: Tau² = 0.74; Chi² = 16.63, df = 4 (P = 0.002); I² = 76%
Test for overall effect: Z = 0.41 (P = 0.68)
Test for subgroup differences: Chi² = 14.04, df = 1 (P = 0.0002), I² = 92.9%
0.01
0.1
1
10
100
Favours corticosteroids
Favours control

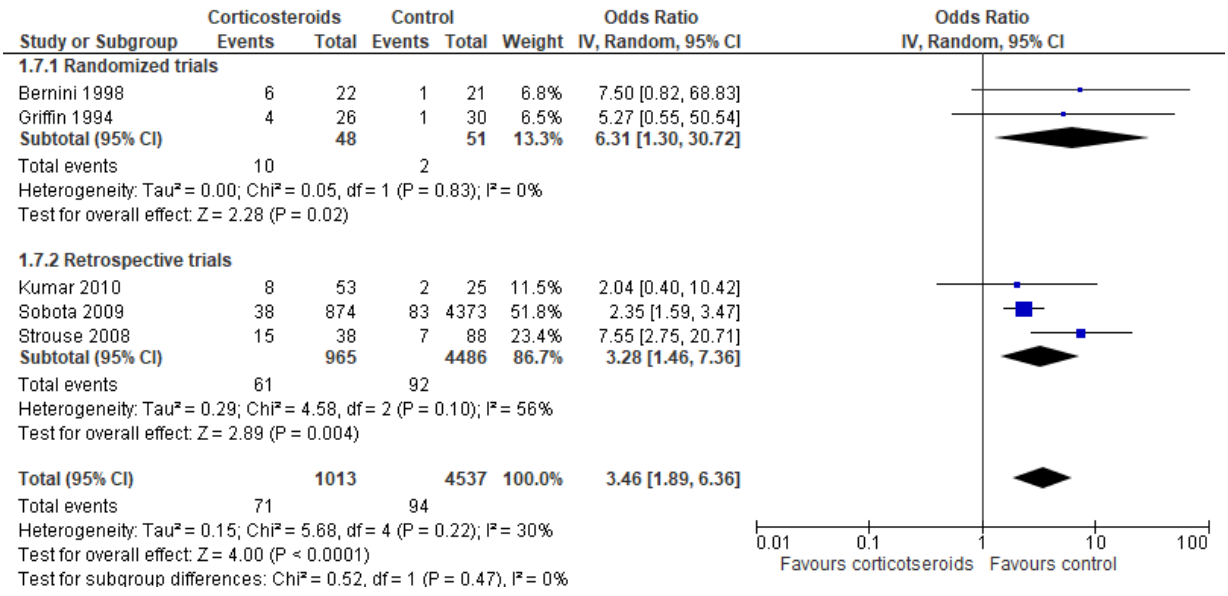
Supplementary Table S3: Effect estimate for complete and sensitivity analysis in studies on acute chest syndrome.

	Complete analysis (6 studies)	Sensitivity analysis (5 studies on ACS)
Readmission rate (OR)	3.21 [1.97, 5.24]	3.36 [1.84, 6.15]
Length of stay (MD)	-24.44 [-35.28, -13.60]	-23.54 [-35.23, -11.85]
Transfusion requirement (OR)	0.98 [0.38, 2.53]	1.22 [0.47, 3.21]

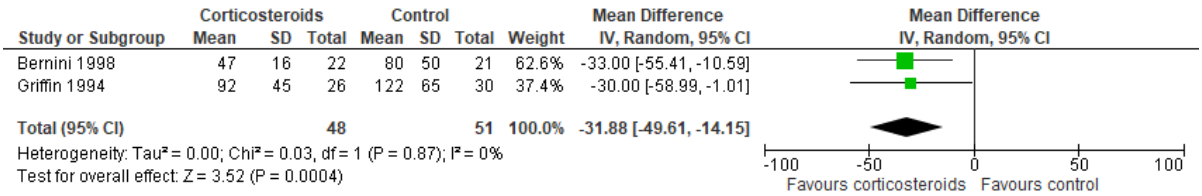
OR: Odds ratio; MD: mean difference

Supplementary figure S3: Sensitivity analysis of the effect of corticosteroids on readmission rate (A), length of stay (B) and transfusion requirement (C) in studies involving pediatric population

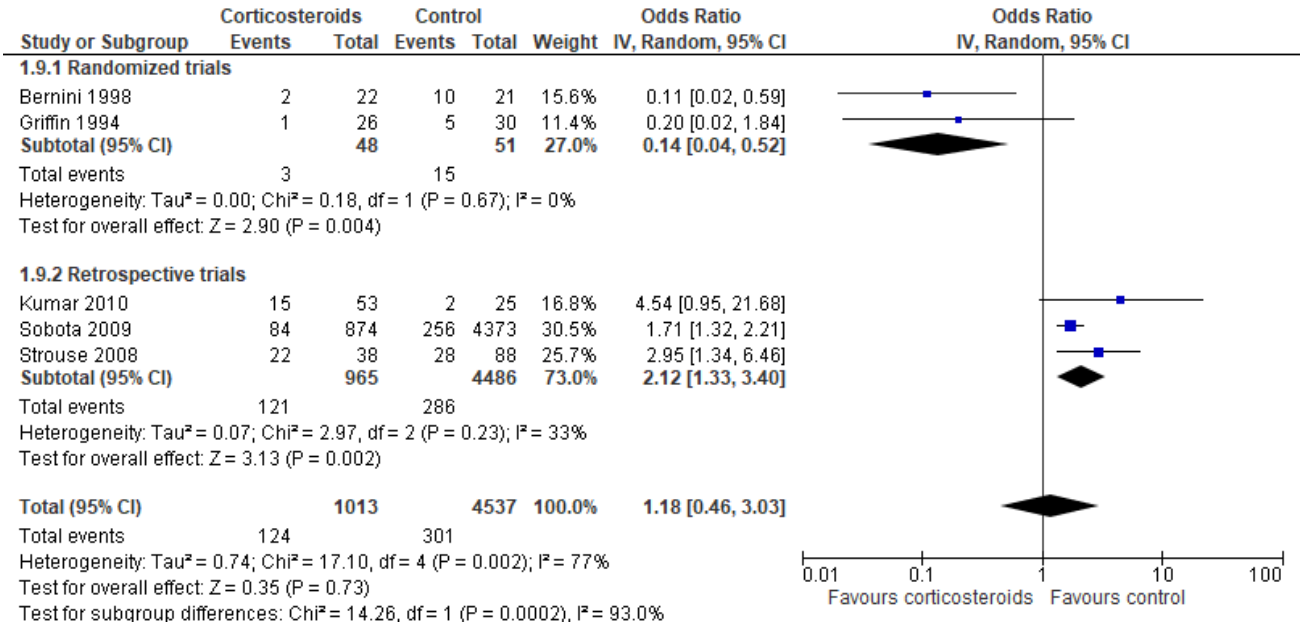
(A)



(B)



(C)



Supplementary Table S4: Effect estimate for complete and sensitivity analysis in studies involving pediatric population.

	Complete analysis (6 studies)	**Sensitivity analysis (5 studies on pediatric population)**
Readmission rate (OR)	3.21 [1.97, 5.24]	3.46 [1.89, 6.36]
Length of stay (MD)	-24.44 [-35.28, -13.60]	-31.88 [-49.61, -14.15]
Transfusion requirement (OR)	0.98 [0.38, 2.53]	1.18 [0.46, 3.03]

OR: Odds ratio; MD: mean difference