Author’s response to reviews

Title: Group B streptococcus is the most common pathogen for septic arthritis with unique clinical characteristics: Data from 12 years retrospective cohort study

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Author’s response to reviews:

July 11, 2019

Dear Editor:

Please find attached our revised article entitled, “Group B streptococcus is the most common pathogen for septic arthritis with unique clinical characteristics: Data from 12 years retrospective cohort study”.

We greatly appreciate the very timely and thoughtful review of our manuscript. We have had the opportunity to respond to the reviewers’ comments and believe the manuscript is substantially improved as a result of these edits. We have attached the revised manuscript and responded to reviews in the following pages. Thank you for your consideration of our manuscript. If you have any questions, please do not hesitate to call me or contact me via telephone or e-mail.

Sincerely,

Sumapa Chaiamnuay, MD
Associated professor in medicine
Editor Comments:

1) In the section “Ethics approval and consent to participate” in the Declarations, please give the reference numbers for the ethical approval.

BMC Rheumatology operates a policy of open peer review, which means that you will be able to see the names of the reviewers who provided the reports via the online peer review system. We encourage you to also view the reports there, via the action links on the left-hand side of the page, to see the names of the reviewers.

Response: The ethical approval was approved by the Institutional Review Board: Royal Thai Army Medical department. The reference number is IRBRTA 343/2560. The approval letter is also attached.

Thomas Hügle (Reviewer 1):

1. Are all cases native joint septic arthritis? Are there no prosthesis? Please specify.

Response: All cases are native joint septic arthritis. Patients with prosthetic joint infection were excluded. The details are described in method section (highlighted).

2. We grouping in GBS and other GBS group? Staph aureus should be analyzed as an own group. This is e.g. important to know for septic arthritis, which occurred after prior intra-articular injection.

Response: The objective of this study is to distinguish risks, clinical features, and outcomes of GBS septic arthritis from other septic arthritis, so we did not added the analyses of Staphylococcus aureus septic arthritis on its own into the manuscript.
However, we analyzed the characteristics of Staphylococcus aureus septic arthritis compared with other bacterial septic arthritis and there were similar to previous studies (1). The Staphylococcus aureus septic arthritis was more common in male than female and there was more likely to have underlying diseases such as DM, liver disease and ESRD than other bacterial septic arthritis. The Staphylococcus aureus septic arthritis was more likely to have skin and cardiac infections and have a history of intra-articular steroid injection than other bacterial septic arthritis. The Staphylococcus aureus septic arthritis was more likely to have single joint involvement (monoarthritis) compared to other bacterial septic arthritis. The Staphylococcus aureus septic arthritis had higher mortality than other bacterial septic arthritis. These results will be added into the supplement.

3. The analysis concerning complications is interesting and merits more details +/- a figure. Are deaths Staph aureus cases? What is a risk factor for death? Blood culture? Staph aureus?

Response: We analyzed the characteristics of death patients compared with survived patients. In death group was more likely to have underlying diseases such as End Stage Renal Disease and Hypertension than survived group. The death group was more likely to have concomitant infection, complication and positive hemoculture and synovial fluid culture positive compared to survived group. The death group was more likely to have non-GBS bacterial septic arthritis and staphylococcus aureus septic arthritis than survived group. The multivariate analyses found that hypertension at baseline, positive hemoculture and synovial fluid culture were associated with death, whereas, GBS septic arthritis was less likely to associated with death. These data were added to the text and Table 6 was added.

4. Rainy season: please specify for which non GBS bacteria the incidence is higher during rainy season. In the discussion it is stated: "we hypothesized that the moist or cold weather could promote the growing and spreading of GBS". This statement is a bit weak. Please discuss more in detail.

Response: We added data from a recent report from active, population-based surveillance in 10 US sites participating in the Active Bacterial Core Surveillance/Emerging Infections Program Network which also found the seasonal variability of invasive GBS infections in nonpregnant adults which are more prevalence in a late summer. Reasons for the late summer peak of invasive GBS infections in nonpregnant adults are unclear but some possibilities include environmental conditions favorable to skin and soft tissue infections and less likely, increased exposure to bovine S. agalactiae strains in summer months. GBS has been linked to bovine mastitis and can be isolated from milk samples obtained in mastitis control programs. However, distinct subtypes, clonal groups and host specificities among human and bovine strains of GBS suggest a very low likelihood for cross species transmission (2).
5. Line 117: "Bacterial septic arthritis was more commonly found in rainy season in both groups with more common in GBS septic arthritis than other bacterial septic arthritis". Please rephrase. This sentence is not clear

Response: We changed the phrase to “GBS septic arthritis in our study was more commonly found in rainy season” to focus on GBS septic arthritis.

Takeaki Wajima (Reviewer 2):

Major Comments

1. -As already identified by the authors as a limitation, comparing GBS with other bacteria has drawbacks. I do not think this is an appropriate comparison, because the other bacteria could cause opportunistic, iatrogenic, and underlying disease-associated infections. The comparison may be meaningful if the purpose is to distinguish GBS-associated arthritis from other septic arthritis.

Response: we clarified the objective of the study according to the reviewer’s comment: “The objectives of this study were to distinguish risks, clinical features, and outcomes of GBS septic arthritis from other septic arthritis” (as highlighted).

-I would suggest analyzing the outcome of GBS cases using laboratory data as explanatory variables in order to discuss the risk of GBS.

Response: Table 3 described the differences in laboratory data between GBS and non-GBS septic arthritis. In Table 5, we added the multivariate analyses of laboratory data and found that hemoglobin level was the only variable independently associated with GSB septic arthritis.

2. There is ambiguity with respect to the bacterial nomenclature. For example, S. viridans is the general term used for several bacteria, including S. oralis and S. mitis. The authors need to clarify if Streptococcus group D is the same as Enterococcus and they also need to specify which Enterobacteriaceae were included.

In addition, the authors should state the methods used to identify these pathogens.

Response: We clarified the method of the study according to the reviewer’s comment: “Conventional biochemical test was used for bacterial identification. GBS identification was confirmed by positive CAMP (Christie, Atkins, Munch-Petersen) test” (as highlighted).
3. The authors should clarify the reason for not discussing gonococcal bacterial arthritis.

Response: Gonococcal bacterial arthritis was excluded because it has a known unique clinical characteristic. Furthermore, sensitivity of gram stain and culture for gonococcal bacterial arthritis is low. So we decided to exclude gonococcal bacterial arthritis.

Reference
