

Comparison between blood culture and MeMed BV test results

Alejandro Zuretti¹, Manan Christian¹, Rita Kogan¹, and Sergey Motov, M.D.¹

¹Maimonides Medical Center, New York, New York

Background:

The rate of cultures ordered for patients where infection is suspected is approximately 40% on Emergency Department patients at Maimonides Medical Center and represents a significant financial burden for our institution.

Blood cultures are the test of choice to diagnose bacteremia; however, 90% or more of blood cultures in routine clinical practice do not grow any organisms, suggesting that many are likely not indicated. A national blood culture utilization benchmark does not exist, nor do specific guidelines on when blood cultures are appropriate or when blood cultures are of low value and waste resources.

MeMed BV[®] (MMBV, fig 1.) is a host-protein test based on TRAIL, IP-10, and CRP that produces a score between 1-100 indicating the likelihood of a bacterial versus viral infection. It has been validated in multiple studies to have sensitivity and specificity >90%.

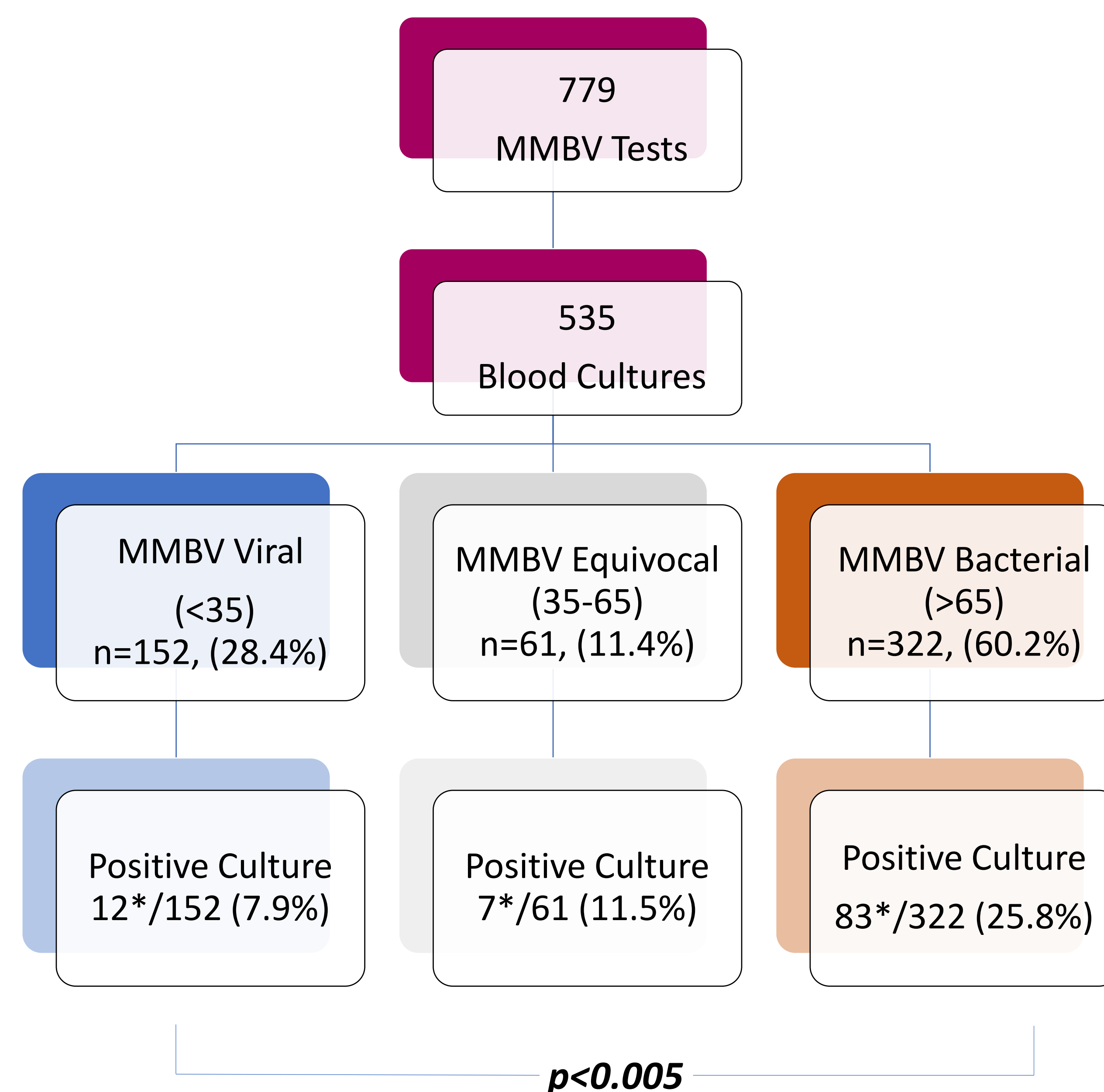
In this study we compare blood culture and MMBV results with a focus on viral MMBV scores.



Methods:

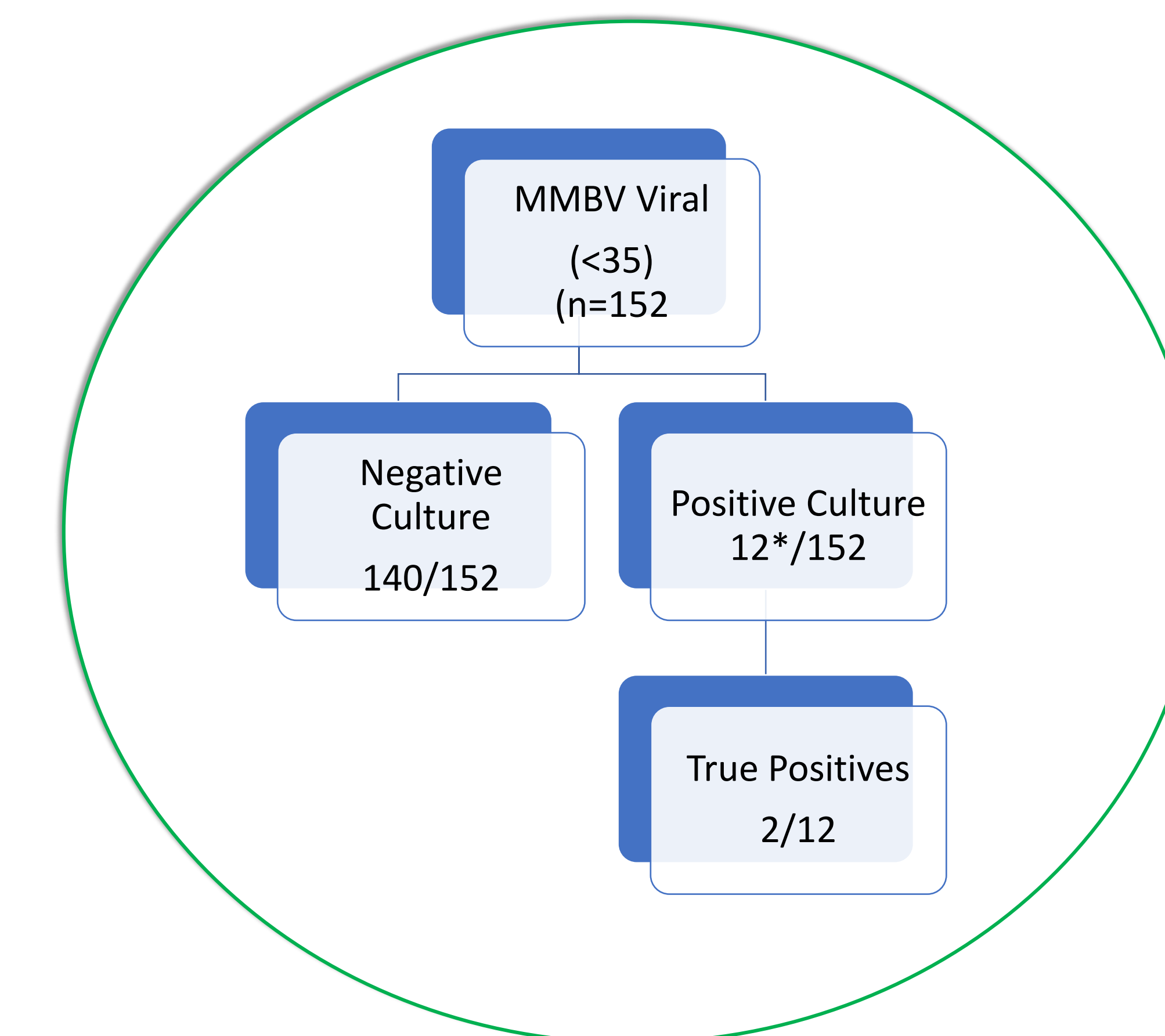
- This analysis focuses on patients presenting at the ED for whom both blood culture and MMBV were ordered.
- MMBV test were taken as part of routine care at ED from March 2022 to June 2023
- BV score 0-35 is viral, 35-65 is equivocal and 65-100 is bacterial
- MMBV was measured using MeMed BV[®] (MeMed, Israel) on MeMed Key[®] analyzers (MeMed, Israel) from serum
- True positives vs contaminants were determined using our SOP as well as through clinical confirmation with an ED adjudicator.

Figure 1. Patient flow, MMBV results and positive blood culture rates



* Including contaminants

Figure 2: Breakdown of viral MMBV results to Blood Culture



Results:

1. MMBV tests were taken for 779 patients during their ED visit, of these, 535 had blood cultures drawn and results recorded.
2. There were 322 cases with bacterial MMBV, 61 equivocal MMBV and 152 viral MMBV (Fig 1.).
3. Positive BLDC with viral results were various *Staphylococcus spp* as well as one *Bacillus spp* non anthracis
4. The rate of positive blood cultures was significantly different between cases with viral and bacterial MMBV results. Cases with viral MMBV had only 7.9% positive blood cultures compared with 25.8% in cases with bacterial MMBV (*p* < 0.005). When removing contaminated blood cultures, the rate of positive cultures is 1.4% for viral (**Figure 2**) and 18.3% for bacterial MMBV results, respectively (*p* < 0.005).

Conclusion:

There is a high agreement (150/152 = 98.7%) between viral MMBV results and negative cultures.