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Error in laboratory report data for platelet count assessment in patients suspicious for dengue: a note from observation

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ABSTRACT

Dengue is a common tropical infection that is still a global health threat. An important laboratory parameter for the management of dengue is platelet count. Platelet count is an useful test for diagnosis and following up on dengue. However, errors in laboratory reports can occur. This study is a retrospective analysis on laboratory report data of complete blood count in cases with suspicious dengue in a medical center within 1 month period during the outbreak season on October, 2015. According to the studied period, there were 184 requests for complete blood count for cases suspected for dengue. From those 184 laboratory report records, errors can be seen in 12 reports (6.5%). This study demonstrates that there are considerable high rate of post-analytical errors in laboratory reports. Interestingly, the platelet count in those erroneous reports can be unreliable and ineffective or problematic when it is used for the management of dengue suspicious patients.

1. Introduction

Dengue is a common tropical infection that is still a global health threat[1]. An important laboratory parameter for the management of dengue is platelet count[2]. The clinical features of dengue include high-grade fever and hemorrhagic problems[1]. The decreased platelet count is an important laboratory finding. Hence, it is the routine practice for using complete blood count for platelet count assessment in dengue suspicious cases. Platelet count is a useful test for the diagnosis and following up of dengue. However, errors in laboratory reports can occur. While errors in laboratory reports can be expected elsewhere, there has been no report on the magnitude and situation of this problem. In this study, the authors studied the magnitude of errors in complete blood count laboratory report data for platelet count assessment in patients suspicious for dengue.

2. Materials and methods

This study is a retrospective analysis on laboratory report data of complete blood count (by the same automated hematology analyzer, Technicon H*3) in cases with suspicious dengue in a medical center within 1 month period during the outbreak season on October, 2015. The setting is an ISO certified laboratory in a medical center. The laboratory result reports of all 184 requests for complete blood count for cases suspected for dengue are assessed for completeness and error.

3. Results

According to the studied period, there were 184 requests for complete blood count of cases suspected for dengue. From

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the 184 laboratory result report records, errors can be seen in 12 reports (6.5%). The details of those identified errors were shown as follows. Missing of some values, such as data of platelet count, is the most common error seen in 8 cases accounting for 4.3% followed by impossible values, such as mean platelet volume, that can be seen in 4 cases accounting for 2.2%.

4. Discussion

Error is a common problem in laboratory medicine. The error can be seen at any phase of laboratory testing and the problem occurs elsewhere. In certified laboratory, laboratory errors can still occur[3]. In the previous report conducted by Wiwanitkit, errors in laboratory in preanalytical, analytical and post-analytical phases are not uncommon and it is the role for laboratories to find proper methods for reducing errors as much as possible[3]. Focusing on post-analytical errors, the errors in laboratory result reports are important problem, which can be the cause for diagnostic errors. The assessment of health records of any tests at high risks for diagnostic errors can be a tool for studying the situation of the problem[4]. Here, the author studied the case of dengue which is a common problem in tropical countries. Platelet count, which can be derived in complete blood count, is a very important parameter for the management of the dengue case. Hence, if there is any error in the laboratory result report, the use of the problematic report can be useless and might result in unwanted clinical outcome of the patients. Indeed, monitoring of error is the important concern in quality management of platelet count and any other coagulation test[5]. This is usually assigned to be the role of the medical laboratory. However, in real practice, the final laboratory result report is used for further interpretation by the physician, hence, the physician should realize and recheck the error. The post-analytical error is hard to determine by medical laboratory and it is usually determined outside the medical laboratory. In this study, up to 6.5% of problematic erroneous report can be seen. Although this study cannot further trace the effect of errors, it can assume that the platelet count in an erroneous complete blood count report cannot be reliable. As previously noted, if the physician in charge does not give full consideration to the laboratory result report, the problem of the report can be missed, and this might easily result in under-diagnosis or over-diagnosis of dengue[6]. Focusing on types of error, it can be seen that all of them are problems of poor validation of results before reporting the analysis results from the laboratory. A common error type of post-analytical errors, transposition error[7], is not seen in this report. This might be due to the use of computational and bar code system for result management.

Since dengue is a common tropical infection and platelet count is an important laboratory parameter in clinical practice. The concern on preanalytical errors in laboratory result reports is important[8,9]. Because many physicians do not have knowledge on quality control and principle of automated hematology analyzer, there should be a system to help physician recheck the laboratory results.

Dengue is an important tropical infection. The laboratory investigation is required for diagnosis and the basic test such as complete blood count is widely used. With the use of laboratory investigation, the error in laboratory analysis is a big consideration. According to the present report, the problems can be seen and the quality control in all phases of laboratory analysis is needed.

Conflict of interest statement

We declare that we have no conflict of interest.

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