Journal of Neurology & Neurophysiology

Bucurescu S, J Neurol Neurophysiol 2013, 4:5
DOI: 10.4172/2155-9562.1000178

Case Report Open Access

Pre-analytical Laboratory Error in a Stroke Patient due to Blood Collection from another Stroke Patient: A Case Report

Septimiu Bucurescu*

Neurology at Klinikum Ansbach, Escherichstr. 1, 91522 Ansbach, Germany

Abstract

In this paper we describe the case of pre-analytical laboratory error in a stroke patient due to blood collection from another same gender stroke patient. We also discuss causes that can generate pre-analytical laboratory errors and prevention measures. The right management of pre-analytical laboratory errors can prevent the occurrence of post-analytical laboratory errors, thus eliminating the risk of taking wrong medical decisions that could affect patients' health.

Keywords: Pre-analytical laboratory error; Stroke patient; Patient identification wristband; Patient identification sticker

Introduction

Laboratory errors are classified according to the time of occurrence throughout the laboratory working process: pre-analytical, analytical and post-analytical. Pre-analytical errors are mistakes that occur before the biological samples reach the laboratory, during collection and transportation. Analytical errors are mistakes that occur in the laboratory during samples processing and data generation. Post-analytical errors are mistakes that occur while taking medical decisions based on false interpretation and use of laboratory results. Most laboratory errors are pre-analytical (61.9%), followed by post-analytical (23.1%) and analytical (15%) [1].

Incorrect identification is considered to be the 5th more frequent cause of pre-analytical laboratory blood test error, after hemolyzed, insufficient, incorrect and clotted sample [2]. Although improvements have been achieved in patient identification through the introduction of patient identification wristband, as well as sample identification through the introduction of patient identification sticker, incorrect identification can still occur [3].

Correct patient identification through health care personnel is important, since a large number of early neurological rehabilitation patients are unable to cooperate due to speech disorders, clouded consciousness and impaired memory. For example 49% of stroke patients have speech disorders and 19% clouded consciousness [4], and 40.2% of traumatic brain injury patients have impaired memory [5].

Neurological rehabilitation patients require frequent laboratory tests due to the fact that they develop often complications, especially infections [6]. The overall infection rate in stroke patients is 30%, the rate of pneumonia is 10%, of urinary tract infection is 10% and the rest is attributed to nosocomial infections of unknown origin [7]. In traumatic brain injury patients the rate of pneumonia is 47% and of surgical site infections 17% [8]. Early diagnosis and treatment of infections in neurological rehabilitation patients reduces duration of hospitalization and therefore healthcare costs, as well as infection associated mortality [9].

Patient History

A 71-year-old patient with left anterior cerebral artery hemorrhagic stroke was treated in our early rehabilitation department. During hospitalization, we received laboratory test results, although no blood was collected and no laboratory test was ordered. Values of leucocytes 13.5 × 10/3 ul (<10.0 × 10/3), neutrophyles 88% (<80), C-reactive protein 13.33 mg/dl (<0.5) and procalcitonin 4.49 ng/ml (<0.5) were increased and lymphocytes 6.4% (>22) were decreased. Since the patient had no clinical signs of infection, we did nothing except for a laboratory test the next day. Values of leucocytes 9.4 × 10/3 ul and C-reactive protein 0.35 were normal and neutrophyles, procalcitonin and lymphocytes were not tested.

Following an internal department inquiry we concluded that the blood came from another patient, a 75-year-old same gender patient with right middle cerebral artery ischemic stroke, with a similar family name, who was transferred the same day to the intensive care unit due to a nosocomial infection. A laboratory test done in the intensive care unit showed similar results to those assigned to the 71-year-old patient with left anterior cerebral artery hemorrhagic stroke.

Discussions

Laboratory errors can occur by collecting blood from the right patient, but labeling tubes with patient identification stickers belonging to another patient, with identical or similar family name ("wrong stickers"). Tubes can be labeled before or after blood collection. Tubes can also be labeled before collection with patient identification stickers belonging to the right patient, but if blood is collected from a patient with identical or similar family name, laboratory errors will occur ("wrong patient").

In order to prevent tubes labeling with "wrong stickers", patients with identical family names should be treated if possible in separate units, and stickers should be double checked by physicians and nurses. In order to prevent blood collection from "wrong patient", the family name, the given name and the date of birth should be read from the patient wristband.

If one receives laboratory results for a patient from whom no blood

***Corresponding author:** Septimiu Bucurescu, Neurology at Klinikum Ansbach, Escherichstr. 191522 Ansbach, Germany, Tel: +49-981-484-32483; E-mail: s_bucurescu@yahoo.com

Received November 14, 2013; **Accepted** November 26, 2013; **Published** December 04, 2013

Citation: Bucurescu S (2013) Pre-analytical Laboratory Error in a Stroke Patient due to Blood Collection from another Stroke Patient: A Case Report. J Neurol Neurophysiol 4: 178. doi:10.4172/2155-9562.1000178

was collected and no laboratory test was ordered, then blood should be collected, the same laboratory parameters should be checked and the error should be documented in the patient's record. If no results are received for a patient where a laboratory test was ordered and blood was collected, then blood should be collected again for analysis. Tracking the patient-source of pre-analytical laboratory errors is time consuming and does not help in taking any further medical decisions. Assigning laboratory results to another patient and taking medical decisions based on these results can be dangerous by generating post-analytical errors.

Conclusions

Wrong patient identification and/or tubes labeling can generate pre-analytical laboratory errors. The prevention of pre-analytical laboratory errors through correct patient identification and tubes labeling is straightforward. In regard to error management, the open approach by documenting the error and repeating the laboratory test can eliminate the risk of taking wrong medical decisions through post-analytical laboratory errors that could affect patients' health.

References

1. Carraro P, Plebani M (2007) Errors in a stat laboratory: types and frequencies 10 years later. Clin Chem 53: 1338-1342.
2. Bonini P, Plebani M, Ceriotti F, Rubboli F (2002) Errors in laboratory medicine. Clin Chem 48: 691-698.
3. Renner SW, Howanitz PJ, Bachner P (1993) Wristband identification error reporting in 712 hospitals. A College of American Pathologists' Q-Probes study of quality issues in transfusion practice. Arch Pathol Lab Med 117: 573-577.
4. Jerntorp P, Berglund G (1992) Stroke registry in Malmö, Sweden. Stroke 23: 357-361.
5. Corrigan JD, Whiteneck G, Mellick D (2004) Perceived needs following traumatic brain injury. J Head Trauma Rehabil 19: 205-216.
6. Brown JM, Deriso DM, Tansey KE (2012) From contemporary rehabilitation to restorative neurology. Clin Neurol Neurosurg 114: 471-474.
7. Westendorp WF, Nederkoorn PJ, Vermeij JD, Dijkgraaf MG, van de Beek D (2011) Post-stroke infection: a systematic review and meta-analysis. BMC Neurol 11: 110.
8. Kourbeti IS, Vakis AF, Papadakis JA, Karabetsos DA, Bertsias G, et al. (2012) Infections in traumatic brain injury patients. Clin Microbiol Infect 18: 359-364.
9. Johnsen SP, Svendsen ML, Ingeman A (2012) Infection in patients with acute stroke. The Open Infectious Diseases Journal 6: 40-45.