Green Colored Plasma in a Patient with Breast Cancer

Plasma Verde numa Doente com Cancro da Mama

Keywords: Breast Neoplasms; Methylene Blue; Plasma
Palavras-chave: Azul de Metileno; Neoplasias da Mama; Plasma

A 46-year-old female patient was electively admitted to our hospital for a sentinel lymph node biopsy, tumorectomy, and mastopexy (breast lift). During surgery, an accidental needle stick injury occurred, and because the patient was the exposure source, screening for blood-transmitted diseases was required. In our laboratory, the sample was centrifuged, and its distinctive appearance surprised us – blood plasma was dark green (Fig. 1). Typically, due to several pigments – bilirubin, carotenoids, hemoglobin, and iron transferrin – blood plasma is yellow.[1]

After reviewing the patient's medical record, we excluded factors previously described as common causes for greenish blood plasma due to associated high levels of ceruloplasmin: pregnancy, oral contraceptive use, rheumatoid arthritis, *Pseudomonas aeruginosa* infection, and sulfonamide drugs.[1,2] Our main hypothesis was that, as reported in other cases, the methylene blue (MB) injected subdermally before surgery, for potential sentinel node mapping in the presence of breast cancer, entered the bloodstream, causing green plasma.[3,4] In fact, MB has also been previously described as a cause of green urine.[5]

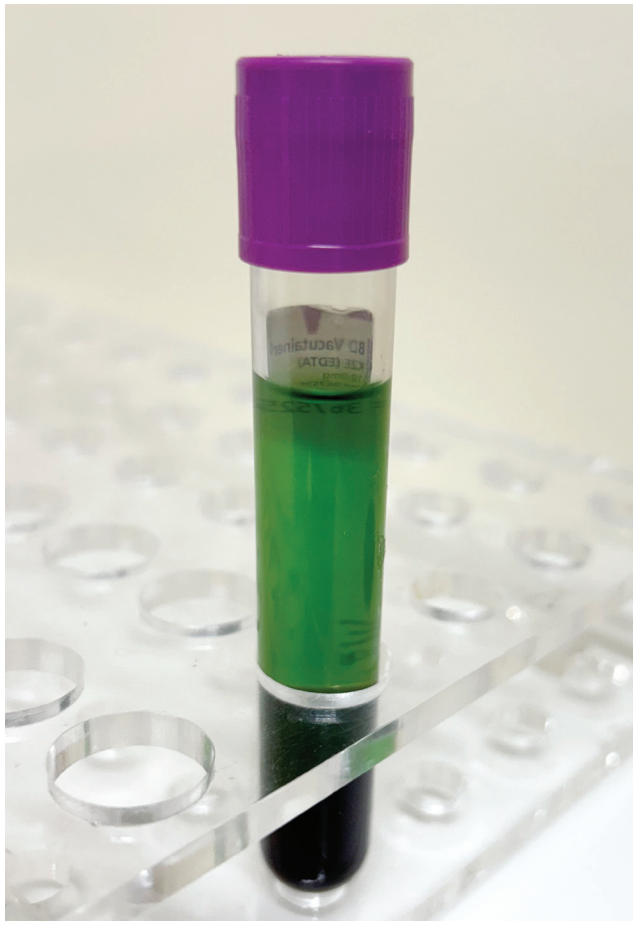

Figure 1 – Green blood plasma after sentinel lymph node biopsy

After centrifugation, the patient was tested for human immunodeficiency virus 1 and 2 antigen (Ag) and antibodies (Ab), hepatitis B virus (HBV) surface Ag and Ab, HBV core Ab, hepatitis C virus Ab. Since it was the usual procedure, screening was performed on *Allinity i*® (Abbott Laboratories, IL, USA), an automated compact immunoassay analyzer system with chemiluminescent detection technology. In this case, the results did not reflect interferences between MB and these immunoassays, nor have they previously been reported. Nonetheless, MB has been known to interfere with pulse oximetry and methemoglobin readings, mimicking oxygen desaturation without true hypoxemia due to an overlap in its peak absorption wavelength.[3]

Both in clinical and laboratory routine practice, it is important to be aware of the frequent causes of unsuitable blood samples for testing. Quickly ruling out benign changes in plasma appearance, as the one reported, may prevent superfluous sample analysis and repeated blood sample collection.

AUTHOR CONTRIBUTIONS

DC: Iconography, conception, investigation and drafting of the work.

IM: Drafting and critical review of the work.

LJC: Scientific description, drafting and critical review of the work.

LRCG, MCK: Critical review of the work.

PROTECTION OF HUMANS AND ANIMALS

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association updated in 2013.

DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

PATIENT CONSENT

Obtained.

COMPETING INTERESTS

The authors have declared that no competing interests exist.

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