Case Report

Vox Sanguinis

Vox Sang 2000;79:57–58

Received: April 12, 1999
Revised manuscript received: November 24, 1999
Accepted: January 6, 2000

# Transfusion-Associated Sepsis Caused by *Candida parapsilosis*

Vicente Pinto[a] Mauricio Telenti[b] Carmen Palomo[c]
José F. Bernaldo de Quirós[c]

Departments of [a]Haematology, [b]Bacteriology and Infectious Disease and [c]Internal Medicine, Hospital Central de Asturias, Oviedo, Spain

## Abstract

***Background and Objectives:*** The contamination of blood components by bacteria is an adverse event, which, although very uncommon, has an exceptionally high mortality rate. ***Case Report:*** A patient suffering from terminal adenocarcinoma of the ovary received a red blood cell unit. During the transfusion, the patient developed fever. Cultures of both the patient's blood and the blood unit were done, and she was treated with antibiotics. Forty-eight and seventy-two hours after the transfusion, *Candida parapsilosis* grew in the blood cultures of the red blood cell bag and of the patient. The infection was controlled with amphotericin. The patient died from cancer progression. ***Conclusion:*** We describe the first case of transfusion-associated sepsis caused by *C. parapsilosis*.



## Introduction

The contamination of blood components by bacteria is a very uncommon adverse event of blood transfusion but with an exceptionally high mortality rate. The FDA reports that of the 30 to 55 annual deaths provoked by complications of blood transfusion that occur in the USA, up to 9 per year were due to bacterial contamination [1]. The estimated frequency of deaths from transfusion of contaminated units is of 0.1–0.5 per million red blood cell units [2, 3], and 21 deaths per million platelets units [3]. As we know, all cases described were due to bacteria, fundamentally *Yersinia enterocolitica* and *Pseudomonas* spp. [4]. We have not found references describing transfusion-associated septic complications due to fungi, except for 1 case (in 2,632) of hematopoietic cell components contaminated by yeasts [5], and 1 case (in 4,995) of *Aspergillus* in outdated random donor platelet concentrates [6].

## Case Report

A 43-year-old woman diagnosed a year previously with a III-B stage papillary adenocarcinoma of ovary on disease progression was admitted for chemotherapy.

On admission the patient had fever and was treated successfully with cefotaxime; at that time, blood cultures were negative. Two weeks later, she was transfused with two units bedside-filtered red cell concentrates. During the transfusion of the second unit, the patient had fever and chills without hypotension, dyspnea, chest and back pain or any of the common signs and symptoms of transfusion reactions. The transfusion was stopped. The appearance of the bag, which had been drawn 11 days before, was normal. Crossmatching

KARGER
Fax + 41 61 306 12 34
E-Mail karger@karger.ch
www.karger.com


0042–9007/00/0791–0057$17.50/0

Accessible online at:
www.karger.com/journals/vox

Dr. Vicente Pinto García
Faro 25
E–33199 Oviedo (Spain)
Tel. +34 98 5108000 (ext. 36535), Fax +34 98 5273657, E-Mail pinto@arrakis.es

tests, screening for red cell antibodies, and the direct antiglobulin test of both pretransfusion and posttransfusion samples were negative. The appearance of both samples was normal. A hemolytic reaction was discarded and the episode was diagnosed as a febrile nonhemolytic transfusion reaction. Following our operating procedures, blood cultures of the pertinent bag were performed. Due to the persistence of fever, empirical treatment with clavulanic amoxicillin was started and blood cultures of the patient were performed. A yeast grew both in the blood cultures of the blood bag and of the patient 48 and 72 h later. At this time, new blood cultures were carried out on the patient's sample, and the bag which had been stored at 5 °C, confirming the results. All blood cultures were performed using Bacter Plus aerobic/F and anaerobic/F bottles, and incubated in at Becton Dickinson 9240® apparatus. To make the blood bag cultures, 8–10 ml of sample were aseptically obtained from the bag. Positive bottles were processed as usual, removed from the instrument followed by a gram stain and a subculture in blood agar and chocolate blood agar incubated at 35 °C in a 5–10% $CO_2$ atmosphere. All the cultures were identified as *Candida parapsilosis* using a Rapid Yeast Plus System (Innovative Diagnostic Systems, Norcross, Ga., USA).

Initially, the patient was treated with fluconazole for 48 h and later with amphotericin B. The fever disappeared and the blood cultures became negative. The patient did not respond to chemotherapy and died 50 days later, with tumoral progression.

The case was communicated to the Regional Blood Bank that had supplied the unit, which located the rest of the blood components which had originated from the same blood donation. Cultures of the fresh frozen plasma were negative. The platelet concentrate had already been transfused on the third day post collection at another hospital, pooled with another five units and passed through a bedside leukocyte-depletion filter. The patient had acute leukemia and did not develop fever or sepsis. The blood donor was contacted and reported that she had been in good health at all times, from before blood donation to the moment of the medical examination. Her blood cultures were negative.

## Discussion

This case is the first description of a blood component contamination by yeast, in this case *C. parapsilosis*, although a yeast has been described contaminating hematopoietic cell components [5]. The fact that the blood cultures of the unit of fresh frozen plasma were negative could be explained by the germicidal effect of the storage temperature (below –30 °C), by the effect of antibodies and complement on the microorganism, or because the yeast is predominantly carried by the leukocytes. We do not know why the transfusion of platelets did not provoke sepsis in the patient. An explanation could be that the initial scarce amount of fungi did not contaminate the platelet concentrate during the process of preparation of components.

On the other hand, the negative blood cultures obtained from the donor some days after the blood donation could be explained either because the episode had been a transient candidemia that coincided with the moment of blood donation, that disappeared shortly after it and before the subsequent medical review or due to contamination by yeast during the process of withdrawal of blood that had colonized the skin or the material used in the preparation of the skin.

Due to the conformity of the fungus found in the transfused unit in two different samples and in the patient, to the fact that the blood culture of the patient was made 24 h after that made on the bag, and given that the employed methodology prevents any exogenous cross-contamination, we believe that these facts confirm the diagnosis of transfusion-associated infection with *C. parapsilosis*.

## References


1 Klein HG, Dodd RY, Ness PM, Fratantoni JA, Nemo GJ: Current status of microbial contamination of blood components: Summary of a conference. Transfusion 1997;37:95–101.

2 Sazama K: Reports of 355 transfusion-associated deaths: 1976 through 1985. Transfusion 1990;30:583–590.

3 Dodd RY: Adverse consequences of blood transfusion: Quantitative risk estimates; in Nance ST (ed): Blood Supply: Risk perceptions, and Prospects for the Future. Bethesda, American Association of Blood Banks, 1994, pp 1–24.

4 Baljchman MA, Ali AM, Richardson HL: Bacterial contamination of cellular blood components. Vox Sang 1994;67(suppl 3):25–33.

5 Webb IJ, Coral FS, Andersen JW, Elias AD, Finberg RW, Nadler LM, Ritz J, Anderson KC: Sources and sequelae of bacterial contamination of hematopoietic stem cell components: Implications for safety of hematotherapy and graft engineering. Transfusion 1996;36:782–788.

6 Leiby DA, Kerr KL, Campos JM, Dodd RY: A retrospective analysis of microbial contaminants in outdated random-donor platelets from multiple sites. Transfusion 1997;37:259–263.