Aseptic arthritis due to parvovirus B19 infection immediately after kidney and pancreas transplantation

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ARTICLE INFO

Keywords:
Arthritis
Kidney-pancreas transplantation
Parvovirus B19

ABSTRACT

Human parvovirus B19 (PVB19) has been frequently identified as a cause of anemia in immunocompromised transplanted patients. Rarely the infection correlates with deterioration of the graft function. Immunomodulatory therapy in PVB19 cases, still not standardised in dose and duration, has been proven to achieve good clinical results. The clinical presentation depends mainly on the immunological status of the patient. Here we report an atypical presentation of an acute PVB19 infection in the immediate postoperative phase after transplantation and aim to raise the recognition of PVB19 as a significant human pathogen in the early post-transplantation period. Additionally, we provide a literature review of clinical presentation and management of recently published cases.

1. Introduction

Human parvovirus B19 (PVB19) belongs to the Erythrovirus genus within the Paroviridae family. It has been identified as the cause of the fifth disease in childhood, hydrops fetalis in pregnancy and a cause of anemia in immunocompromised patients. The clinical presentation of an acute PVB19 infection depends mainly on the immunological status of the patient. The symptoms vary between non-specific flu-like complaints, haematological disorders and more typical presentations such as rash and/or rarely arthralgia.

An increasing number of PVB19-associated syndromes after solid organ transplantation has been reported. Furthermore, severe complications requiring high-dose intravenous immunoglobulin (IVIG) therapy and a high rate of recurrence have been described. There is insufficient experience with diagnosis and therapeutic regimes, especially if a non-typical disease course is present. Here we describe an interesting case of an atypical clinical presentation of PVB19 infection early after kidney and pancreas transplantation.

2. Case report

A 44-year old female patient, listed for combined kidney-pancreas transplantation due to diabetes mellitus type I associated with end stage renal disease, received a matching organ from a deceased donor. On admission the patient had no specific complaints, especially symptoms of an infection were denied. On physical examination there were no abnormalities except for a skin lesion at the arteriovenous (AV)-fistula, where an attempt to recanalize the fistula had failed a few weeks ago. The laboratory tests showed a slight leukocytosis, normocytic normochromic anemia and increased retention parameters, for which a haemodialysis was performed.

At the same day the patient received combined kidney-pancreas transplantation and recovered uneventfully after the operation. A triple immunosuppressive regimen consisting of tacrolimus, mycophenolate mofetil and prednisolone and an induction therapy with thymoglobulin was initiated. A moderate therapy associated pancytopenia was reported but no blood products substitution was required. An ultrasound...
examination showed a good perfusion of the transplants and the organ function was satisfactory. The retention parameters dropped rapidly, diuresis of up to 200 ml/h was reported and no further haemodialysis and no insulin substitution was required. After a short intensive care stay the patient was successfully transferred to a normal ward. Because of an intermittent tachycardia, a hyperthyroid state was diagnosed and accordingly suppression therapy was initiated. Before discharge the Demers-Catheter was removed as no further haemodialysis treatments were expected.

Two weeks after transplantation the patient developed fever. The laboratory results showed a significant leucocytosis (31.6 Tsd/µl) and a drop in hemoglobin (from 10.5 to 8.6 g/dl). Blood and urine cultures, as well as a skin swab test and sampling from the removed Demers-Catheter remained negative for bacterial colonization. An empiric anti-infective therapy with a third generation cephalosporin (ceftriaxone) and a nitroimidazole antibiotic (metronidazole) was initiated according to a standard protocol. A newly diagnosed cardiac murmur and a nitroimidazole antibiotic (metronidazole) was initiated accordingly suppression therapy was initiated. Before discharge the Demers-Catheter was removed as no further haemodialysis treatments were expected.

Prior to evaluation for an acute PVB19 infection was anemia[10,11]. To summarise, we present an atypical case of an acute PVB19 infection immediately after transplantation. The infection was most likely acquired nosocomially or shortly before hospitalisation, since a post-mortem analysis of the donor for a PVB19 infection was negative as well as the negative serological status of the patient herself during the pretransplant period. Of note, the clinical course and manifestation of the infection showed no pathognomonic findings, e.g. typical skin rash, severe pure red cell aplasia (PRCA) or myocarditis were not present. This is most likely the result of the immunosuppressive therapy, in particular due to suppressed T-cell reactions.

An increasing number of human parvovirus B19 (PVB19)-associated syndromes have been reported after solid organ transplantation. Arthralgia seems to be more common in non-immunocompromised females[1], typically of a migrating character[2] and usually intercriticized syndromes have been reported after solid organ transplantation. Arthralgia seems to be more common in non-immunocompromised females[1], typically of a migrating character[2] and usually intermittent, since the virus does not cause joint destruction and rarely leads to chronicity[3]. PVB19 is frequently diagnosed in haemodialysis patients[4,5] and is a rare but clinically relevant infection during the post transplantation period. In case of solid organ transplantation inflammatory responses are dimmed by immunosuppressive regiments, leading to an atypical presentation. The diagnosis is hampered by the altered immunological responses in patients under immunosuppressive therapy[6] and a direct evidence of the virus presence is needed. A clinical study of 98 cases by Eid et al. supported that the clinical presentation varies and is associated with pancytopenia, hepatitis, myocarditis and even allograft tissue loss or dysfunction have been described[7–9]. Still the most common symptom which led to evaluation for an acute PVB19 infection was anemia[10,11].

There is no specific antiviral therapy available on the market. Usually the patients are treated symptomatically and clearance occurs spontaneously[9]. Severe complications require therapy with high-dose intravenous immunoglobulins. Further, reduction of T-cell depleting therapy has additional beneficial effect for the outcome of the infection. Dose regimens and therapy duration are still not optimised. Recurrent infections are often seen especially after solid organ transplantation[12–14].

In summary, recognition of PVB19 as a significant human pathogen in the post-transplantation period can improve the diagnostic strategy and lead to a better management of the transplanted patient.

### Appendix A. Supplementary material

Supplementary data associated with this article can be found in the online version at [http://dx.doi.org/10.1016/j.tpr.2016.10.001](http://dx.doi.org/10.1016/j.tpr.2016.10.001).

### References