

Anaphylactic Reaction After Initial Exposure of Basiliximab: Case Reports

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ABSTRACT

Basiliximab is potent, relatively safe immunosuppressive induction agent used in transplantation. Prophylactic use at the time of transplantation has been advocated to improve allograft outcomes. We report two cases of kidney transplant recipients with anaphylactic reactions after initial exposure to Basiliximab.

BASILIXIMAB IS A MURINE chimeric monoclonal antibody directed against the α -chain of the high-affinity interleukin-2 receptor complex. Repeated administration of chimeric monoclonal antibodies is generally well tolerated. Although anti-idiotypic sensitization may occur, the overall antigenic load of chimeric antibody is considerably less as compared with rodent antibodies. In fact, cytokine release syndrome has not been observed among patient who received basiliximab during clinical trials.^{1,2} In this article, we report two cases of anaphylactic reactions after the first course of basiliximab.

CASE REPORTS

Case 1

An 18-year-old woman was born with bladder exstrophy. Although she had undergone primary closure of the bladder plate, the reconstruction failed with persistent urinary incontinence and upper urinary tract deterioration. She needed hemodialysis for treatment of end-stage renal failure due to chronic pyelonephritis in 2005. She had a past history of asthma and allergy for sulfamethoxazole-trimethoprim. For further treatment, we performed renal transplantation from her mother after urinary tract reconstruction

including bilateral nephrectomy, cystectomy, and creation of an ileal pouch with a continent catheterizable channel. Immunosuppression consisted of basiliximab (20 mg) together with tacrolimus, methylprednisolone, and mycophenolate mofetil. During the renal transplantation, her blood pressure dropped suddenly and severe bronchospasm occurred 10 minutes after intravenous administration of basiliximab. Skin flushing and a diffuse pruritic rash were also observed. Continuous intravenous dopamine and noradrenaline were started immediately; 1 hour later, the patient recovered to her previous blood pressure levels, and renal transplantation was completed (Fig 1). Graft function was immediate and the postoperative course was uneventful. The patient did not receive a second dose of basiliximab on postoperative day 4.

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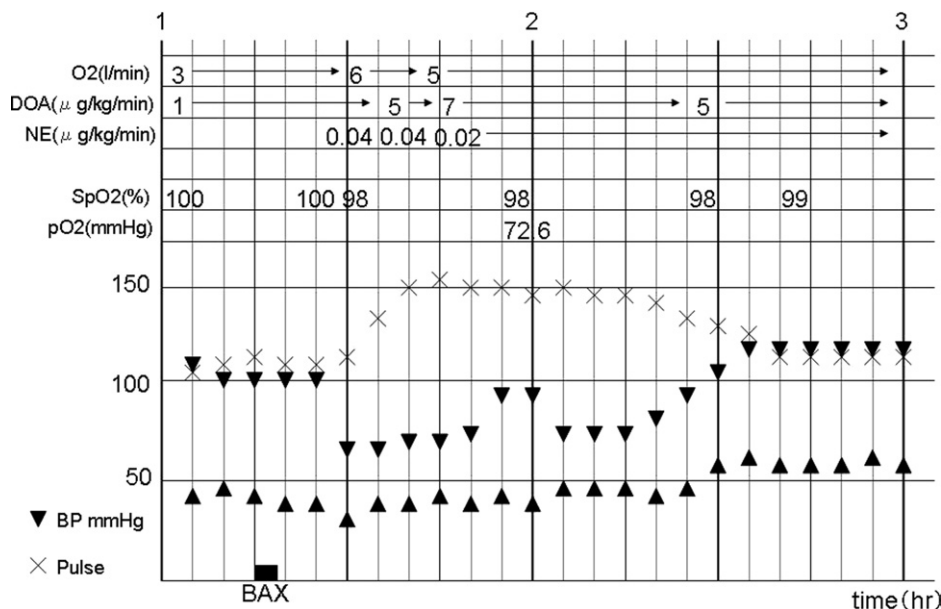


Fig 1. Intraoperative course of the case 1. DOA, dopamine; NE, noradrenaline; BAX, basiliximab.

Case 2

A 30-year-old woman had been on continuous ambulatory peritoneal dialysis for 6 months because of end-stage renal failure caused by Henoch-Schonlein purpura nephritis. She sometimes had an attack of bronchial asthma, which responded to nasal theophylline administration. She received a renal transplant from her father. The immunosuppressive regimen included basiliximab, tacrolimus, methylprednisolone, and mycophenolate mofetil. At the time of the operation, severe bronchospasm and hypoxemia were observed a few minutes after basiliximab administration. Oxygen saturation decreased from 99% to 90%. Immediate administration of theophylline and methylprednisolone did not achieve adequate ventila-

tion, requiring increased concentrations of sevoflurane and oxygen (Fig 2). Extubation of the endotracheal tube had to be delayed more than 1 hour after the completion of the operation to confirm stabilization of respiratory function. The second dose of basiliximab administration on postoperative day 4 was avoided.

DISCUSSION

Remarkable advances in understanding immune mechanisms have led to the development of innovative strategies in the field of renal transplantation. Antithymocyte globulins or anti-CD3 monoclonal antibodies have been success-

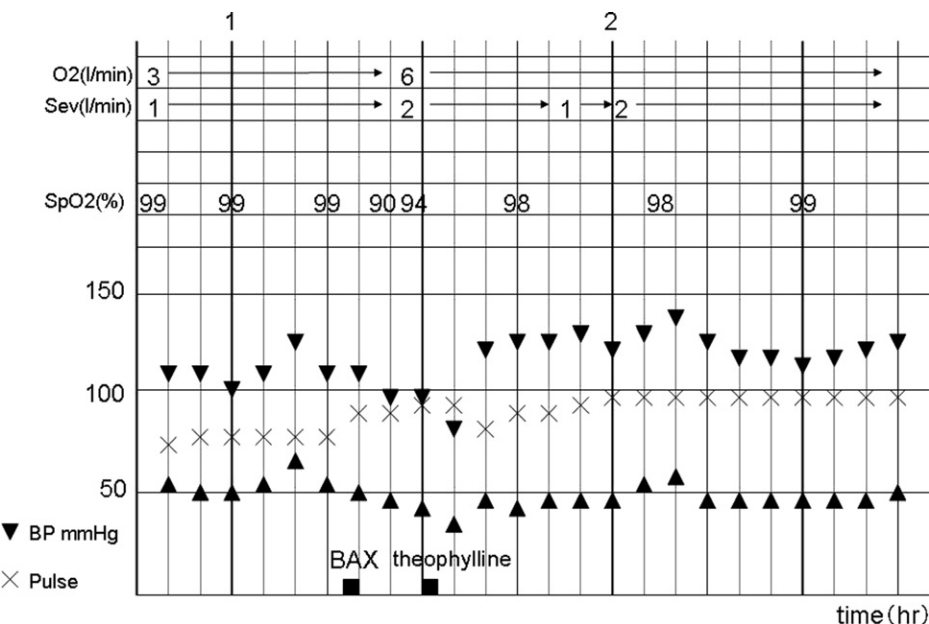


Fig 2. Intraoperative course of the case 2. Sev, sevoflurane.

ful to prevent or reverse rejection episodes.³⁻⁵ They are associated with side effects, especially the development of antixenogeneic antibodies with decreased immunosuppressive effect and anaphylactic reactions upon repeated administration. Abramowicz et al demonstrated that 38% of patients receiving OKT3 developed immunoglobulin sensitization after exposure to the agent.⁶

To overcome the immunogenicity associated with the rodent sequence, these antibodies have been reengineered to contain more human sequences, thus becoming less foreign. Basiliximab is a monoclonal chimeric antibody directed against the α -chain of the high-affinity interleukin-2 receptor complex. This antibody was engineered by cloning segments of the murine immunoglobulin sequence into the human immunoglobulin gene.

Basiliximab is composed of approximately 30% murine variable region sequence and 70% human constant region sequence.⁷ The resultant chimeric monoclonal antibody maintains the antigen-binding capacity of the original rodent antibody but possesses less immunogenicity.⁸ Because the incidence of anti-idiotypic and antixenogeneic neutralizing antibodies is extremely rare, repeated basiliximab administrations may be well tolerated if the recipient requires an additional transplantation.

In 2001, the periodic safety update report for marketed drugs reported 32 cases of severe acute hypersensitivity reactions, including anaphylaxis, occurring in patients after administration of basiliximab. These reactions have been observed both on initial exposure to basiliximab or subsequent doses. The reactions include hypotension, tachycardia, cardiac failure, dyspnea, bronchospasm, pulmonary edema, respiratory failure, urticaria, rash, pruritus, and sneezing. Because of the small number of cases and wide

confidence limits, the data regarding anaphylactic shock after treatment with basiliximab are inconclusive.

In our hospital, 18 renal transplant patients have received basiliximab. Of those 18 patients, two developed anaphylactic reactions on initial exposure to basiliximab. Both patients had a past history of allergies, such as bronchial asthma and drug allergy. Patients who have a past history of allergy should only be exposed to basiliximab therapy with caution.

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