

A Case Report of Hospital Acquired Resistant Bacterial Infections in a Rituximab Treated Patient with Lupus Vasculitis of Genitourinary Tract

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Keywords

Clonidine, premedication, hypertension, stress response, laryngoscopy

Abstract

Background and Aims: Integral components of general anesthesia are endotracheal intubation and Laryngoscopy. However hemodynamic responses, such as tachycardia and hypertension, occur immediately and often lasts for 5 to 10 minutes. Hemodynamic responses are exaggerated in hypertensive patients. This study aimed to assess the efficacy of clonidine infusion as a premedication for attenuating hemodynamic reactions of hypertensive patients to laryngoscopy and endotracheal intubation. **Methods:** This prospective, randomized, controlled study enrolled 60 hypertensive patients of either sex scheduled for surgery under general anesthesia and endotracheal intubation. Patients in clonidine group (C group, n = 30) received intravenous clonidine (4 µg kg⁻¹), diluted in 50 ml normal saline, over 15 minutes by syringe pump pre-operatively, at rate of 200 ml / hr and those in the control group (NS group, n = 30), were given 50 ml normal saline as a placebo in the same manner. The Sedation score of each patient was recorded 15 min after infusion completion. General anesthesia was subsequently given to the patients in both groups in accordance with a prescribed protocol. Hemodynamic parameters were recorded before induction, during laryngoscopy, and at various intervals after laryngoscopy, and statistical analyses were performed. **Results:** Compared to the control group, the study group had a significantly lower heart rate in all of the recorded readings. There was a significant attenuation of systolic blood pressure and mean arterial pressure in group C compared to those in the NS group. The sedation score after 15 min was significantly higher in Group C than Group NS (p< 0.001). There were no significant variations noticed between the two groups regarding complications that occurred after the operation. **Conclusion:** Intravenous 4 µg kg⁻¹ clonidine infusion is effective in preventing exaggerated hemodynamic responses during laryngoscopy and tracheal intubation in patients with hypertension.

Key Words

Lupus Vasculitis, Resistant bacterial infections , Klebsiella oxytoca, E coli, Septic arthritis.

Abstract

An autoimmune condition known as systemic lupus erythematosus (SLE) is characterised by the production of certain autoantibodies against DNA, histones, and neutrophil proteins. Urinary tract disease is a frequent symptom of systemic lupus erythematosus (SLE), most usually in the form of lupus nephritis. Both toddlers and adults may be affected by subclinical bladder involvement in the disease's progression. Lupus cystitis can be diagnosed before SLE and can cause very vague symptoms involving the urinary and digestive tract, as well as no symptoms at all. Rituximab, a monoclonal anti-CD20 antibody, is used to treat autoimmune

and lymphoproliferative diseases. In this research, we provide a case of bacterial infections caused by resistant strains after receiving Rituximab therapy for Lupus vasculitis.

1. Introduction

Urinary tract disease is a frequent symptom of systemic lupus erythematosus (SLE), most usually in the form of lupus nephritis. Both toddlers and adults may be affected by subclinical bladder involvement in the disease's progression[1]. The diagnosis of lupus cystitis can occur before that of SLE and may be accompanied by minimal to nonexistent symptoms of the urinary and digestive tract[2]. Although the precise cause of bladder inflammation in lupus is unknown, histological studies point to a potential contribution from immune complex-mediated small artery vasculitis[3]. Despite being a rare SLE presentation, lupus cystitis presents a difficult diagnostic and treatment task for medical professionals[4]. Rituximab, a monoclonal anti-CD20 antibody, is used to treat autoimmune and lymphoproliferative diseases[7]. Rituximab is a potential treatment option in patients with Lupus vasculitis. Patients who receive Rituximab medication are more likely to develop resistant bacterial infections because of the immune suppression[9]. Here, we present a female patient who received four doses of Rituximab infusion for Lupus vasculitis and developed resistant bacterial infections.

2. Case Report

A 38-year-old female patient arrived with the complaint of right hip discomfort that started suddenly and worsened over time. The patient, who is a known case of Lupus vasculitis, received four infusions of Rituximab one month ago. The right hip joint is restricted in its range of motion. There were no reports of fever, nausea, or vomiting. There have been no reports of dyspnea or chest discomfort. Regular bladder and bowel movements. Not a known case of T2DM, SHTN, asthma, thyroid disease, or medication allergies.

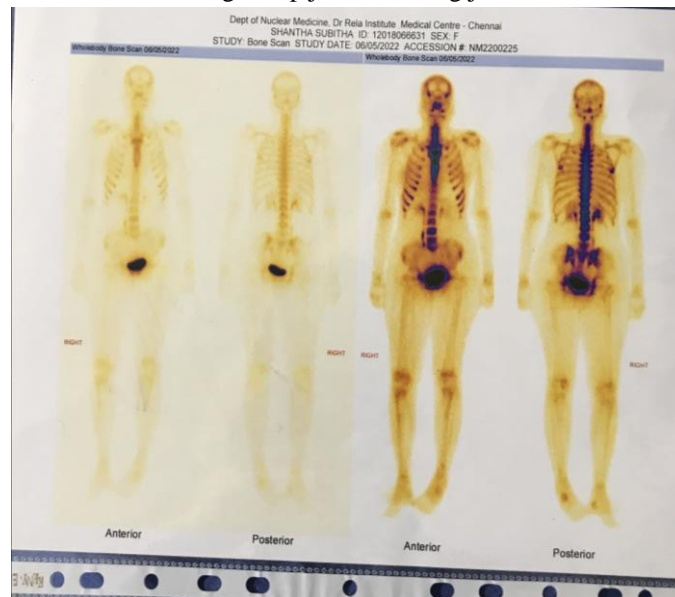
No abnormalities of the circulatory, respiratory, abdominal, or neurological systems were found during the general examination. Vitals are stable.

3. Investigations

Investigations showed, Hb-11.2gm/dl, Twbc 7246cells/cumm, 2.45 lakh/cumm platelets, and an ESR of 85mm/hr. Blood glucose, renal function tests, liver function tests, and urine analysis are all normal. Right femoral head fracture with mild to moderate effusion was seen on the hip joint's MRI. The klebsiella oxytoca bacteria growth was seen in the joint pus culture. The 2D echo examination was normal. The synovium of the joint on histopathology investigation showed symptoms of septic arthritis. No signs of fungus growth were visible in pus for Koh mount. pus for AFB is negative. Culture of urine revealed no growth.



MRI of the Right Hip joint showing joint effusion .



Bone Scan Study.

Treatment

An arthrotomy of the right hip was performed, and a drain was installed to remove the pus from the joint. *Klebsiella oxytoca*, which is sensitive to inj tobramycin, was growing in pus culture. In order to treat the patient, Tobramycin and cefepime were Started. Naproxen and paracetamol were administered as analgesics. Despite receiving antibiotic therapy for a month, there remained a constant pus drain. After receiving antibiotic treatment for one month, pus culture revealed *Ecoli* growth. The patient received three weeks of treatment with Levonadifloxacin, clindamycin, Zavicefta, and Aztreonam antibiotics. After receiving the above antibiotic therapy, a second pus culture revealed no growth and the pus draining from the incision site likewise stopped. The patient was started on injectable Tigecycline 50mg bd for three weeks before being discharged because the *Ecoli* was discovered to be susceptible to Tigecycline on VITEK culture.

4. Discussion

Rituximab is a chimeric anti-CD20 antibody made of variable sections from a mouse anti-CD20 antibody and constant portions from human IgG1 immunoglobulin[9]. A surface transmembrane protein marker called CD20 is produced on B cells when they differentiate from pre-B cells to plasma cells. The calcium channel CD20 is thought to have

a role in the maturation and activation of B lymphocytes.[10]

Several methods, including antibody-dependent cell-mediated cytotoxicity (ADCC), complement-mediated cytotoxicity (CDC), antibody-dependent phagocytosis (ADP), and direct effects of binding of rituximab to CD20, are used to cause cell death once rituximab is bound to CD20 positive cells.[11] As CD20+ B cells are intermediates in the maturation process, it is believed that Rituximab's mechanism of action in autoimmune illness is caused by disruption in immune system function of B cells or a reduction in plasma cell generation. This decrease of immunity can result in hospital acquired resistant multibacterial infections that are challenging to treat with the current medications in patients with SLE vasculitis who are receiving Rituximab therapy[12]. In the aforementioned instance, the patient developed resistant *Klebsiella* & *Ecoli*, which continued to proliferate even after three weeks of treatment with higher antibiotics.

5. Conclusion

Patients who has undergone Rituximab therapy , should watch for any signs and symptoms like fever,sudden onset joint pains ,etc which indicate a probable infection . Such patients should be thoroughly investigated for any foci of infection and if found ,they should be aggressively treated with antibiotics and other supportive management . If needed , surgical interventions like drainage , arthrotomy, etc should be done for the quick

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recovery of the patient . Patient education also plays an important role in timely identification of infections and initiation of treatment .

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Ethical Consent

Patient included in the study provided informed consent.

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No funding was used to conduct the study.

Conflict of Interest

The authors declare that there was no conflict of interest.

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