



# Bell's Palsy Onboard: A Case Report of Widespread Disease in a Special Setting

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Received July 20, 2021; Accepted October 11, 2021; Online Published October 17, 2021

## Abstract

**Introduction:** Cruises are one of the major travel industries worldwide, and various medical issues can happen onboard. This is a case report of peripheral facial nerve palsy in an older man with diabetes treated onboard a world cruise ship.

**Case Presentation:** A 78-year-old man presented to the infirmary due to difficulty closing his left eye during a 105-day world voyage. The patient was in good general health and had a history of hypertension and diabetes mellitus (treated by dietary intervention). He was diagnosed with severe Bell's palsy by history and physical examination and treated with prednisolone and valacyclovir without any complications and a near-complete recovery. The possibility of misdiagnosis and deterioration of diabetes mellitus due to the corticosteroid treatment was explained to the patient.

**Conclusion:** When it comes to medical management in a resource-limited setting like cruise ships, passenger physicians trained in a wide variety of illnesses are crucial. It is essential to explain to patients the prognosis and expected outcome of the medical condition. Emergency medical evacuation may be warranted in some instances.

**Keywords:** Aged, Diabetes Mellitus Type 2, Emergency Medicine, Facial Paralysis, Oceans, Seas

**Citation:** Aoki Y. Bell's palsy onboard: a case report of widespread disease in a special setting. Int J Travel Med Glob Health. 2021;9(4):191-193. doi:10.34172/ijtmgh.2021.31.

## Introduction

Cruises are one of the significant travel industries globally, although they are currently suspended due to the emergence of the coronavirus disease 2019 (COVID-19). Various medical issues can happen onboard, which are most commonly outbreaks of respiratory infections and gastroenteritis.<sup>1</sup> The need to revise infection control regulations onboard ships are even more critical now with COVID-19. In addition, other illnesses unrelated to infectious diseases can also occur, such as cardiovascular and cerebrovascular events, which sometimes require medical evacuation.<sup>2</sup> Because of this wide range of medical issues, onboard physicians, crew members, and maybe even passengers are required to provide appropriate first aid for all kinds of emergencies. Even though most patients visiting onboard clinics do not have severe conditions, some passengers may develop acute diseases due to their underlying diseases, as many passengers on cruise ships are older adults.<sup>3</sup> This is a case report of peripheral facial nerve palsy in an elderly male patient treated onboard a world cruise ship before the start of the COVID-19 pandemic.

## Case Presentation

A 78-year-old man presented to the infirmary onboard due to

difficulty closing his left eye. The patient and his wife were on a 105-day world voyage. He was on candesartan for hypertension and only dietary intervention for diabetes mellitus. A "fit to travel" letter was provided by his primary care physician before he had embarked. On the day of embarkation (day 1) from Japan, he noticed dryness and redness in his left eye, and on day 3, he consulted the ship's infirmary. At that time, the ship would be at sea for 8 d to the next port of call. The patient was in an excellent general condition, with a blood pressure of 130/68 mm Hg, heart rate of 82 beats/min, oxygen saturation of 96% on room air, respiratory rate of 16 breaths/min, and body temperature of 36.6°C. On physical examination, the patient's face was asymmetric. Other than the facial nerve paralysis that had resulted in the loss of forehead movement, there were no cranial nerve deficits. No paralysis in the upper and lower extremities was noted, neither was ataxia. The tympanic membrane was transparent bilaterally, and there were no bullous eruptions around the auricle. The patient did not report any hearing loss. The probability of Lyme disease was low based on its geographic distribution. Unfortunately, the ship did not have any diagnostic imaging facilities. The patient was subsequently diagnosed with severe Bell's palsy because of the difference between the left and right sides of



the face at rest and the inability to close the eye despite the maximum effort completely.

Treatment with prednisolone 60 mg/d and valacyclovir 3000 mg/day was initiated. The symptoms began to improve, and on the fifth day of treatment, prednisolone was gradually tapered and discontinued on the tenth day. Valacyclovir was also discontinued after seven days. The patient's blood glucose level temporarily increased to 200–250 mg/dL, but no alterations in the level of consciousness were observed. On the 71st day of the voyage, the facial paralysis had almost completely resolved. The patient eventually completed the cruise travel and disembarked with a referral letter to an otorhinolaryngologist on the land for a follow-up consultation. However, the outcome and final diagnosis are unknown as no reply was received to the referral letter.

### Discussion

We present a case of peripheral facial palsy in an elderly male patient with diabetes onboard. Bell's palsy is a widespread disease that emergency physicians frequently encounter in the emergency department on the land. Although considering developments in maritime travel, experienced medical providers on board must have diagnosed and treated patients with Bell's palsy in each setting, which has been rarely reported in the literature to date. Corticosteroids and antivirals are usually available on board; therefore, patients can be sufficiently managed. However, treating patients with Bell's palsy, especially on board a cruise ship, in a challenging setting with limited resources includes some important points to note.

During the patient's initial consultation, the ship was supposed to be at sea for an additional 8 d before moving to the subsequent scheduled port. In the clinical setting, Bell's palsy can be identified by emergency physicians with a low degree of misdiagnosis,<sup>4</sup> in most cases by history and physical examination alone.<sup>5</sup> However, differential diagnoses include otitis media, temporal bone fracture, postoperative damage, neoplasm, sarcoidosis, herpes zoster viral infection, and cerebrovascular accident.<sup>6</sup> Accordingly, computed tomography and magnetic resonance imaging should be performed if a cause related to the central nervous system, such as a cerebrovascular disorder or a brain tumor, is suspected. Therefore, if upper motor neuron disease or cranial nerve involvements other than the facial nerve are suspected, an emergency evacuation may be required for further investigation. In addition, this raises concerns regarding the impact on the entire shipping route, transportation, and cost. In the case of onboard medical treatment, however, patient disposition should always be determined based on what is best for the patient. In the present case, the medical history and physical examination were compatible with a diagnosis of Bell's palsy. However, the potential of missing another diagnosis, such as a neoplasm, and the implications of delayed definitive management were explained to the patient because a previous study had suggested that diabetes in older adults is a risk factor for the misdiagnosis of Bell's palsy.<sup>4</sup> Notably, COVID-19 has recently been reported to be associated with

Bell's palsy.<sup>7</sup> In the relevant situations, physicians should be aware that Bell's palsy can be a sign of COVID-19, although the current case occurred before COVID-19 emerged.

About not only diagnosis but also treatment, diabetes mellitus should be managed carefully. Treatment of Bell's palsy with corticosteroids within three days of symptom onset has been associated with an increased recovery rate at 3 and 9 months.<sup>8</sup> Thus, passenger physicians should initiate appropriate treatment immediately to improve long-term recovery. Regarding adverse events, glucocorticoids can induce diabetes mellitus and exacerbate hyperglycemia in patients with underlying diabetes.<sup>9</sup> Notably, cruise travel generally serves rich foods to passengers, which can cause deterioration of blood sugar control in diabetic patients. In this case, the patient was informed that the treatment might affect glycemic control and potentially result in a diabetic coma. Although the patient's diabetes was well controlled without any medications or insulin, preboarding management of underlying diseases is particularly important in a resource-limited cruise ship setting that includes many older people.<sup>10</sup>

The cruise ship physician must be capable of responding to various illnesses and make appropriate decisions regarding the transfer of patients for further medical treatment; thus, it is necessary for the physician to receive training in a wide range of illnesses. Broad experience in emergency and general medicine, good communication skills, and previous cruise experience are useful requirements.<sup>11</sup> To tackle challenges in management, access to medical information online is crucial. In our case, it was possible to search relevant articles, which greatly affected the treatment. Reports describing misdiagnosed cases can also contribute to the accumulation of knowledge of the disease. Using Bell's palsy as an example, a recent literature review revealed that in cases of facial palsy, the presence of malignant or benign tumors, sarcoidosis, infections, neurodegeneration, and cranial hemorrhage were sometimes overlooked because of the rare diseases nature, false-negative or misinterpreted neuroimaging studies, or a failure to recognize the physical signs.<sup>12</sup>

Furthermore, incorporating remote medical staff or telemedical advice is essential for safe cruise travel, which creates a system that allows for consultation with specialists, such as otorhinolaryngologists.

### Conclusion

A case of a male diabetes patient with Bell's palsy occurred onboard during a long-term cruise. A passenger physician onboard should be aware that Bell's palsy may be encountered during a long-term cruise. When it comes to medical management in a resource-limited setting like cruise ships, physicians trained in a wide variety of illnesses are crucial. It is essential to explain to patients the prognosis and expected outcome of the medical condition. Emergency medical evacuation may be warranted in some instances.

### Author's Contributions

The author managed the patient on board under employment by the Japanese travel agency that chartered the cruise ship described in this manuscript, reviewed the clinical chart, perused the potentially

relevant literature, and drafted the manuscript. The author approved the submission of the report and took full responsibility for its content.

#### Conflict of Interest Disclosures

The authors have no conflicts of interest to declare.

#### Ethical Approval

Informed consent was obtained from the patient for the publication of this manuscript.

#### Funding/Support

None.

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