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# High Flow Oxygen Therapy in Respiratory Failure Secondary to Drowning

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**Introduction:** Drowning is a process that results from submersion or immersion which can lead to respiratory failure. Drowning, which is more related to the predominantly young male population in the world, constitutes the third cause of accidental deaths in the whole age groups, while it is the second cause in the 5-44 age group. Drowning is one of the causes of ARDS requiring mechanical ventilation support. High flow nasal oxygen (HFNO) may be useful as a new treatment method, however, the data are limited. In this case report, a patient with respiratory failure secondary to drowning treated with HFNO will be presented.

**Case Presentation:** A 50-year-old female with history of hypertension; declared that she was started to wheeze and cough while swimming in the sea, and does not remember the afterwards. Her relatives stated that she was under water for about a minute. She was then taken to the shore immediately and transported to the district hospital. In physical examination, the patient was unconscious (GCS 3), hypothermic, hypoxic and pupils were isochoric. After stabilization, she was referred to the emergency room of our center. During initial inspection, the eyes were open spontaneously, she was cooperative, and oriented; blood pressure:153/90mmHg; pulse:90/min; respiratory rate:28/min; body temperature:36.5°C; oxygen saturation:95%(with BPAP support). Her physical examination revealed peripheral cyanosis and occasional rales in lung auscultation. The patient had infiltrations and ground glass opacities in all lobes on chest x-ray and thorax CT scan. She was admitted to the Pulmonary Diseases Intensive Care Unit because of the need for advanced respiratory support and close monitoring. ABG value at admission was pH:7.306, PCO<sub>2</sub>:41.9 mmHg, PO<sub>2</sub>:79.4 mmHg, Lactate:3.2 mmol/L, HCO<sub>3</sub>:20.0 mmol/L, O<sub>2</sub> Sat:93.6%. The patient underwent rapid HFNO support. At the beginning, 60 l/min flow and 60% FiO<sub>2</sub> support was initiated. As her general condition, respiratory distress and oxygenation value (satO<sub>2</sub>>%92) of the patient were recovered, the level of treatment support was gradually decreased. On the third day of hospitalization respiratory support switched to the reservoir oxygen mask. The patient was discharged on the 7th day of hospitalization. Control visit at fourth month revealed that her clinical and physical examination findings were within normal limits with normal pulmonary function tests (FVC:3.10 lt 91%, FEV1:2.27 lt 78%, FEV1/FVC:73.08%).

**Conclusion:** High-flow nasal oxygen may be a suitable treatment option in selected patients with hypoxemic respiratory failure due to drowning.

**Keywords:** Drowning, high flow nasal oxygen, respiratory failure