



LETTER TO EDITOR

Cerebral Oximetry: Is It A New Method for Detection of Tissue Perfusion after Transplantation?

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Dear editor,

Organ transplantation is one of the medical success stories of the 20th century. The success of organ transplantation completely depends on the early diagnosis and treatment of the complications (1).

Vascular complications are one of the most frequent causes of transplant failure, considering that the artery is the unique route by which oxygenated blood is supplied to the transplanted organ. Obstruction of the main artery of transplanted organ causes parenchymal ischemia. This condition is difficult to discover in time to save the organ (1). Diagnostic imaging plays an important role in the early diagnosis and treatment of this condition. For rapid diagnosis of artery thrombosis in transplanted organ, many studies were performed. Angiography duplex sonography, compound tomography (CT) scan, and CT-angiography were suggested for early diagnosis of this condition (1,2). Microdialysis is another possible new tool for the rapid and reliable detection of vascular complications after transplantation (1).

To detect acute vascular complications in the first few days after transplantation and organ ischemia, measurement of the tissue oxygenation of the transplanted organ may be enough. In our previous study, we designed a micro pulse oximetry which was inserted at the site of operation to detect the flow of the oxygenated blood in the transplanted organ (2).

In this method, the monitoring is continued. Decreased tissue saturation and discontinuing the pulse rate may suggest vascular occlusion and could investigate via sonography and/or other methods very soon. By early diagnosis and intervention, the parenchymal damage may decrease (3). Al-

though the risk of infection in this method was high and the device had several limitations. Hence, we suggest cerebral oximetry as a new non-invasive method which can detect tissue perfusion.

Cerebral oximetry is a device which was described for the first time more than 25 years ago and recently uses during cardiac surgery. Its technology is closely similar to pulse-oximetry, it measures regional oxygen saturation (4).

In this method which mainly used for detection of oxygen saturation in brain tissue during cardiac surgery, the regional tissue oxygen saturation of hemoglobin can be estimated in a non-invasive and continuous manner by near-infrared spectroscopy. The device is inserted into the skull of the patient (5).

There are some reports of successful use of this technique in the organs such as kidney for detection of perfusion (2).

With inserting the detector of cerebral oximeter on the skin of the site of transplantation, e.g., kidney, liver or bowel, we can detect the tissue perfusion of the transplanted organ all times.

In this method, the monitoring is continuously, and in all minutes we can detect the tissue oxygen saturation in the transplanted organ. In this setting, the obstruction is detected as soon as it exists. Therefore, we suggest cerebral oximetry as a new device for detection of vascular complications after transplantation.

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