Digital pressure ulcer after pulse oximetry

Digitales Druckulkus nach Pulsoxymetrie

Abstract

In emergency medical service, in intensive care unit and anaesthesia oxygenation is monitored with pulse oximetry apparatus. Pulse oximetry probe is usually attached to the finger, toe or earlobe. To the best of our knowledge this is the first case report describing the occurrence of a pressure ulcer after finger pulse oximetry measurement.

Keywords: pressure ulcer, finger pulse oximetry

Zusammenfassung


Schlüsselwörter: Druckulkus, Fingerclip-Pulsoxymeter

Case report

A 76-year-old man with insulin dependent diabetes mellitus type II, renal insufficiency caused by diabetic nephropathy had an arteriovenous shunt for dialysis on the right arm. Because of an intercommisural mitral valve insufficiency he underwent mitral valve clipping. The mitraclip therapy procedure was done under general anaesthesia and takes approximately 3.5 hours. A pulse oximeter probe was placed on the right index finger to allow continuous monitoring throughout the procedure. After removal of the pulse oximeter clip an unspecific flush occurred in the radiodorsal middle phalanx area. Over the next four weeks a sharply demarcated skin lesion developed and continued to worsen into result shown in Figure 1. The patient stated that he had never felt any pain. The physical and radiological examination revealed full-thickness skin damage extended into the subcutaneous tissue layer and the extensor tendon. The lesion was diagnosed as a grade IV pressure ulcer. After surgical debridement the remaining defect was covered by a reversed cross-finger flap.

Diabetes is strongly associated with both micro- and macrovascular complications that encourage the development of peripheral vascular disease and neuropathy. By impairing the blood flow and loss of sensation the risk for developing pressure ulcers – particularly in the feet – increases [1]. In emergency medical service, in intensive care unit and anaesthesia oxygenation is monitored with pulse oximetry apparatus. Pulse oximetry probe is usually attached to the finger, toe or earlobe. One case of grade II pressure ulcer on a patient’s ear as a result of pulse oximetry probe has been described [2]. To the best of our knowledge this is the first case report describing the occurrence of a pressure ulcer after finger pulse oximetry measurement. Pressure is assumed to be the most important single factor in the development of pressure ulcers. In healthy individuals capillary filling pressure of the finger arteries at heart level lies between 12–50 mmHg. Values of >30 mmHg can only be measured in warm and vasodilated state [3]. Using a pressure measuring instrument we calculated the pressure of a correct attached pulse oximeter finger clip with 18 mmHg. Through longer period of time incorrect attached pulse oximeter finger clips can induce pressure ulcer. This indicates a correct use of finger pulse oximeter especially in patients with...
assumed capillary pressure. This case shows that pres-
pressure ulcers not only develop on predilection sites and
continuous checks of all instruments attached to the
patient are suggested.

Notes

Competing interests

The author declares that he has no competing interests.

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