Case report

Near fatal infection of a patient with a left ventricular assist device due to unrecognized fetal death

Christian Etz, Henryk Welp, Hans H. Scheld, Christof Schmid*

Department of Thoracic and Cardiovascular Surgery, University Hospital Münster, Albert-Schweitzer-Str. 33, D-48149 Münster, Germany

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Abstract
We report on an unusual case of a young female patient who received an implantable LVAD after unsuccessful emergency coronary bypass surgery following acute myocardial infarction. After LVAD placement, it became evident that the patient had been pregnant. She had to undergo gynaecological surgery during mechanical support to remove the deceased fetus.

Keywords: Heart failure; Pregnancy; LVAD; Sepsis

1. Introduction
Left ventricular assist devices are increasingly used not only in chronic but also in acute heart failure. Especially young patients with acute myocardial infarction and no other therapeutic option are provided with medium-term and long-term mechanical support systems [1,2]. The intention is either bridge-to-transplant or bridge-to-recovery.

We report on an unusual case of patient, who underwent LVAD placement without the knowledge of pregnancy.

2. Case
A 30-year-old obese woman collapsed in the emergency department of a city hospital right prior to admission following acute myocardial infarction. After 30 min of external cardiac massage, she could be stabilized and was referred to the University Hospital for further treatment, being intubated and mechanically ventilated. Emergency PTCA failed due to occlusion of the LAD. Severe ventricular arrhythmia mandated coronary bypass surgery to be initiated during external and internal cardiac massage. Intraoperatively, the left coronary artery was occluded by a large thrombus, no arteriosclerotic lesion was evident. Both, the left anterior descending artery as well as a marginal branch were cleaned from thrombus and provided with a venous bypass. Weaning from extracorporeal circulation was not possible; the patient underwent IABP placement and had to be connected to an extracorporeal membrane oxygenation (ECMO) system.

Forty-eight hours after ECMO implantation, myocardial pump function was still poor with no signs of recovery. Due to the young age of the patients and the lack of signs for neurologic deficit when reducing anaesthesia, decision towards implantation of a left ventricular assistance was made. A pneumatically driven extracorporeal device (EXCOR, BerlinHeart AG, Berlin, Germany) was implanted, inserting cannulas into the left ventricular apex and the ascending aorta. The chest could be closed only after 2 days, after stabilization of the coagulation system. Thereafter, the patient recovered well and could be extubated in time.

On day 14 after device implantation, the young patient’s clinical condition worsened as she developed fever and an inflammatory syndrome. During an extensive search for a focus of infection the young patient remarked that she had been pregnant for 8 weeks. Beta-HCG levels had still been low; and the foetus had remained in utero. Operative abortion of the already deceased fetus was performed on day 17 after LVAD implantation under effective anticoagulation therapy with running left ventricular assistance. Anticoagulation with heparin was adjusted to a partial thrombin time of 50 s, and platelet inhibitors were halted. The gynaecological procedure was uneventful; no substitution of blood products was necessary. After surgery, inflammation parameters rapidly declined. The patient recovered well, could be transferred to the step-down unit 5 days later and is now awaiting heart transplantation.
3. Discussion

Implantation of ventricular assist devices under emergency conditions is difficult. Our young patient had a thrombotic occlusion of coronary vessels, related hypercoagulability during the first weeks to a pregnancy. She underwent all therapeutic steps possible in a medically well-equipped society. The first question which arises is the matter of indication for the LVAD placement [3]. Main argument for the LVAD implantation was the young age. Since a complete medical investigation was not feasible due to the emergency circumstances and the shortness of time, one may well ask whether it is enough to exclude severe neurological damage for decision making toward LVAD placement [4]. If it is the main intention to save a patient’s life, one may well argue like that.

The issue of infection during VAD support has been very important in the past. Pocket and drive-line infections as well as device contamination have been feared as potentially lethal complication, especially with intracorporeal systems [5]. With extracorporeal VAD support, septic complications originating from the cannulas or directly from the VAD (the latter can be easily replaced) occur less often. Accordingly, the search for a focus is predominantly based on the patient’s history. In our case, we had no history, and were not aware of the pregnancy, also due to the obesity of the patient. The pregnancy was found out by chance. Since the fetus probably died during the initial resuscitation, urgent operative abort had to be performed under LVAD support. But even if the fetus would have still been alive, we would have advocated for surgical abortion. Fortunately, the gynaecological procedure could be performed without complications.

In conclusion, the case presented demonstrates that even in case of emergency conditions, it is important to have a comprehensive patient’s history. In female patients, pregnancy has to be ruled out prior to LVAD placement, to avoid infectious complications and to obviate the need for surgical abortion during mechanical support.

References


