



## CASE REPORT

# AORTIC REGURGITATION AND EXTRACORPOREAL MEMBRANE OXYGENATION. AN UNDISCUSSED TOPIC

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This is a case report of a young male admitted to the hospital for acute cardiac failure in chronic dilated cardio-myopathy due to aortic regurgitation (AR). The patient had previously refused aortic valve replacement (AVR) fearing a poor postoperative outcome. He suffered from ongoing dyspnea and peripheral edema with a serious asthenia. His clinical condition was poor with a seriously impaired bi-ventricular function (ejection fraction of about 10-15% and moderate dilation of the right ventricle with TAPSE of about 12 mm) caused by a severe AR and pulmonary edema.

The question was: what could we do? Surgery, "wait and see" or biventricular support?

AVR surgery is accompanied by a high mortality rate because of the risk of failure to wean from extracorporeal circulation. The "wait and see" conservative approach did not seem to be a real option because of the hemodynamic instability (systolic pressure of about 90 mmHg, low urine output, impaired consciousness due to low cardiac output, increased lactate bloodlevels) and young age of the patient. Biventricular support was considered but is contraindicated because of the severe AR. The possibility to unload the left ventricle by the use of trans-atrial vent was disqualified because the entity of regurgitant volume was higher than the drainable entity allowed.

The patient was placed on mechanical ventilation and amine infusion (Dobutamine 7.5 µg/Kg/min

and adrenaline about 0,2 µg/Kg/min): despite intensive medical treatment the patient died three days later.

We know that severe AR is a clear contraindication for ventricular support but what can we establish about mild or moderate AR. Moreover, what is the best management in case of acute dysfunction due to severe AR?

In series of patients presented in literature there is no information about the presence and degree of AR<sup>[1]</sup> and the topic has been discussed mainly in the field of left ventricular assist devices<sup>[2-6]</sup> where aortic valve dysfunction is frequent in long term follow up.

The topic of AR in case of acute biventricular dysfunction is really interesting since the time available for decision making is limited and the hemodynamic condition severely impaired. What degree of AR may disqualify a patient from ECMO implantation? Probably, mild-moderate (2+) AR is the highest degree allowed since in case of more significant regurgitation the risk of ventricular overloading is too high, even in case of ventricular venting.

In conclusion we can speculate that:

- Mild-moderate 2+ AR is the highest degree allowed in case of ECMO;
- Ventricular venting is mandatory even in case of trivial AR and is always preferable in case of ECMO support to prevent the ventricular distension;
- More than moderate AR is a contraindication for ECMO implantation. An acceptable strategy could consider AVR followed by ECMO implantation. Even if the mortality rate is quite high, valvular patients are usually young and every effort must be taken.

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The aim of this short discussion is to open the question of the AR in case of ECMO implantation. Further studies are required to fully assess this topic and the perspectives to increase the use of the peripheral ECMO and percutaneous ventricular venting through the interatrial septum. This may prove to be of interest to improve the outcome of these critically ill patients.

### References

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