Reviewer’s report

Title: Predictive factors for pacemaker requirement after transcatheter aortic valve implantation

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Reviewer: ofer merin

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This is an important study that adds more information on an emerging technique. There are numerous papers dealing with the need of a temporary or a permanent pacemaker after surgical Aortic valve replacement. Still as TAVI is a relatively new procedure we are still lacking full understanding of predictive factors that will predict the need of a pacemaker after TAVI.

These factors for pacemaker requirement can fall into one of four categories:

1. Baseline ECG. (Preoperative) Surprisingly the authors did not find any correlation with baseline conduction disorders. This is in contrast with studies of surgical aortic valve replacement, where baseline conduction disturbances do predict pacemaker need. This could because of a different mechanism causing the need of pacemaker in TAVI patients or secondary to the relatively small sample in this study.

2. Clinical parameters- these are well described. Still a few factors are missing: degree of MR and AR. Table 1 mentions only patients with grade> 1 MR or AR, but does not give a more detailed breakdown. Do the authors suggest that there is a correlation between the degree of MR and AR and the need for a pacemaker? If so I would suggest a breakdown to the different degrees of MR and AR.

Was any correlation found with the amount of calcification of the aortic valve? In surgical AVR severely calcified valves lead to a more aggressive decalcification and therefore a higher risk of damage to the conduction system. This could be less relevant in TAVI, where balloon valvuloplasty is done instead of decalcification, but still the amount of calcium might be correlated with damage to the conduction system.

3. Technical aspects: there is missing data here. It is well known that with the Corevalve prosthesis there is a higher rate of pacemaker requirement. This is due to the extension of the valve frame into the left ventricular outflow tract. Was any measurement of the position of the valve?

4. Postoperative ECG changes. In this aspect the authors did a thoroughly important study.

A few other details are worth revisions:

1. This is a retrospective analysis of 45 patients operated between January 2007 to January 2008. I would guess that in the last 4.5 years many more were
operated in this center. What is the rate of pacemaker implantation since then? Did this study change anything in their policy or indications to pacemaker implantation?

2. Among the 23 patients which had a pacemaker implanted only 10 had clear indication. I would suggest concentrating on these patients with a new A-V conduction disorders.

3. Is there any follow up on the 23 patients who had a pacemaker implanted? How many of them stayed pacemaker dependent? This may assist in better understanding the indications for pacemaker implantation, especially in the 13 patients with a questionable indication.

4. An * mark is missing on the bottom of table 3.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

'I declare that I have no competing interests'