SHORT COMMUNICATION

Complete transection of epicardial pacing lead during pregnancy

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Herein, we presented a case of pregnancy associated complete transection of epicardial pacing lead.

A 36-year-old female patient was admitted to our hospital for an evaluation of permanent pacemaker malfunction. She has had open heart surgery for Ebstein anomaly and mitral stenosis with implantation of bioprosthetic mitral and tricuspid valves and a permanent epicardial pacemaker for postoperative complete AV block ~10 years ago. During the follow-up period, high pacing thresholds necessitated implantation of second epicardial pacing lead. The patient had an uneventful follow-up period, until sudden development of fatigue and recurrent syncope, along with increase in lead impedance and the absence of pacing capture during the 7th month of pregnancy. At this stage lead fracture was suggested, and due to prior operation, a new epicardial pacing lead was introduced into the coronary venous system via the right subclavian vein. Intermittent failure of pacing capture was detected after uneventful delivery, and the patient was referred to our institution for further diagnostic and therapeutic considerations. Fluoroscopic examination revealed complete transection of the epicardial pacing lead (Figure 1). Pacemaker pocket and generator were observed at the primary implantation site directly under the incision line, located in the left iliac region of anterior abdominal wall (not shown). Transthorasic and trans-esophageal echocardiography revealed severe right atrial enlargement and severe stenosis of the bioprosthetic tricuspid valve, and the patient was referred for tricuspid valve replacement and surgical implantation of a new epicardial pacing lead.

Discussion

Although, older epicardial electrodes were frequently associated with a significant rate of increase in pacing thresholds and sensing abnormalities in the past, recent advances in lead technology, such as introduction of steroid eluting leads, led to a considerable improvement in these parameters.¹,² Fracture and transection of epicardial pacing leads are important problems encountered in some of these patients. Complete transections are rarely observed with endocardial leads and to our knowledge, only two cases have been reported in the medical literature,³,⁴ none of them related to pregnancy. On the other hand, transection of epicardial pacing leads is not so infrequent, and is reported to occur secondary to growth in pediatric population or as a result of trauma. The main place for epicardial electrode fractures in pediatric population was reported to be in the junction between pericardial cavity and the abdominal wall, where the diaphragm works as a hinge point during the intensive muscular activity.⁵ In our opinion, abdominal enlargement secondary to pregnancy, led to the transection of the lead at this weakest point, prone to fracture and transection, in our patient. Non-traumatic complete transection of epicardial pacing leads has not been reported in adult patients before. Most likely in the present case, uterine and so abdominal enlargement during pregnancy were extensive, leading to stretching and subsequent transection of pacing lead, that traversed the anterior abdominal wall, during the late pregnancy.

Preoperatively, positioning of the epicardial lead and device pocket should be considered in female patients in

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order to avoid lead stretch during pregnancy. It should be noted that in our patient epicardial lead crossed the abdominal wall from right side to the left, and this factor resulted in significant stretching and subsequent transection of the lead. This course of lead should be especially avoided in female patients. Other peri-procedural methods, such as cushioning of electrode with tissue at the above mentioned weakest hinge point, and avoidance of fixation of lead to pericardium were reported to be of value in the pediatric population.\(^5\) Although there is no data supporting this point of view, we suggest that endocardial lead implantation should be preferred in this patient population. In patients undergoing epicardial lead implantation, importance of the lead course discussed above should be kept in mind and generator pocket should be placed in upper abdominal wall or even in the sub-mammalian area, and placing it in the lower abdominal wall, should be avoided.

Conflict of interest: none declared.

References