

Coronary Stent Infection: Case Report and Definition

To the Editor:

A low incidence of coronary stent infections has been described in literature, although severe complications such as purulent pericarditis and endarteritis, have been reported. Currently, infection definition criteria or protocolized clinical strategies do not exist. Therefore, we report a case of coronary stent infection associated with pericarditis and we review similar cases in the literature.

We present the case of a 55 years old male with diabetes type 2 and a history of AMI. Coronary angiography, was performed due to post-AMI angina, and evidenced total occlusion of the right coronary artery. Ten days later, the patient underwent a rotablator assisted angioplasty and implantation of a 26 mm Jostent Flex stent mounted on a 3.5-25 mm Crossail balloon. This procedure lasted 3 hours using a JR 3.5 guiding catheter (Cordis) 7 French, and Valor balloons (Cordis) of 1.5-20 mm and Crossail (Guidant) of 2.0-20, 3.0-20 and 3.5-25 mm. The catheter sheath was removed after 4 h. The day after, the patient presented fever from undetermined origin during 24 h. Two weeks later, fever and chest pain reappeared, while pericardial rub was found in the physical examination, as well as pericardial effusion in the 2D echocardiographic examination. The patient was admitted to the hospital, three blood cultures were drawn, and cephalothin and gentamicin therapy was initiated due to suspected acute pericarditis. A transesophageal echocardiographic examination (TEE) revealed an image in the aortic valve suggestive of a vegetation. The patients remained with fever, pericardial rub and diffuse ST elevation, and blood cultures were negative; cephalothin was replaced by vancomycin on the fourth day, after two additional blood cultures. Ten days after, one blood culture was positive for *Candida* spp. Amphotericin B was added to therapy and the patient remained symptomatic after 15 days; a second TEE did not disclose significant changes with respect to the first. The patient was referred for surgery due to the absence of clinical solutions; during surgery a nodule on the aortic valve was resected and infectious endocarditis was excluded by pathology report. Partial pericardiectomy was performed due to pericardial thickening, with a pathology report compatible with unspecified chronic pericarditis. A venous bypass to the right coronary artery and posterior ventricular branch was also performed, as well as the removal of the coronary artery-stent complex. Explanted surgical materials were sent for culture, and coagulase-negative oxaciline-resistant staphylococci (CNRS) was identified in all the samples. Postoperatively evolved stable with fever, with four completed weeks of antibiotic therapy. The patient remains asymptomatic eight months later.

Incidence of coronary stent infections reported in the literature is low despite a high rate of implantations.¹ It is the first infection registered in our centre for over 1000 stents implanted. Risk factors associated with the appearance of infections have been already described.¹ Sankari et al,¹ James et al² and Bouchart et al³ separately explained the association between percutaneous transluminal coronary angioplasty (PTCA) and increased risk of infection when ipsilateral femoral site is repunctured within 3 to 7 days after initial procedure. They also identified that repuncture over a catheter sheath left on patient for more than 24 hours will increase this risk. Our case had the following predictors: as major risk factors, cine-coronary angiography 10 days before PTCA adding stent, with ipsilateral access repuncture; and two minor risk factors, the prolonged procedure adding the catheters and rotablator employed, and the patient's profile (diabetic type 2). The cases reported¹⁻⁵ emphasize the appearance of fever associated with acute coronary syndrome or pericarditis. This is the third notified case of post-procedural pericarditis and its diagnosis was confirmed by positive coronary artery-stent complex culture.

Amongst the diagnostic criteria proposed by Dieter,⁴ obtaining a surgical sample is a requirement for definitive diagnosis, similarly to Von Reyn's criteria for infectious endocarditis, although they do not include any stent infection specific criteria for possible diagnosis. The reason is that both acute coronary syndromes and pericarditis or leucocytosis can be related to a baseline ischemic event or the procedure, but not to infections.

The necessity of coronary artery-stent complex resection is controversial. Published cases do not demonstrate any superiority for either strategy, as outcome is similar with or without resection, with 50% mortality in any of the groups.⁴ Surgery was decided for our patient as symptoms persisted with recurrent pericardial syndrome, despite receiving an adequate antibiotic therapy during 15 days. Presence of CNRS, predominant in endovascular procedures, was confirmed in all the surgical samples. The isolation of *Candida* in blood cultures from a diabetic patient should be attributed to the translocation from fungi colonization of the gastrointestinal tract (the first most frequent site), or to a nosocomial acquisition following an endovascular procedure. *Candida* is also the fourth or fifth most common agent in blood cultures of patients after admission.

After analyzing the case, our opinion is that stent related infections are rare but evolve with a high morbidity/mortality. Risk factor stratification would be reasonable for deciding when to administer antibiotic prophylaxis, specially for patients with the catheter sheath is left in place during more than 24 h, ipsilateral site repuncture is performed or diabetes. Special attention should be given to the appearance of unexplained post-procedural acute coronary syndrome,

fever and leucocytosis or pericarditis. We also propose blood cultures and administering antibiotics for staphylococci to patients that comply with the possible diagnostic criteria described above.⁴ Surgical resection should be considered on the basis of each patient's outcome.

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REFERENCES

1. Sankari A, Kumar A, Kabins S, Chandina H, Lieb D. Staphylococcal pericarditis following percutaneous transluminal coronary angioplasty. *Cathet Cardiovasc Interv* 2000;50:71-3.
2. James E, Broadhurst P, Simpson A, Da S. Bacteraemia complicating coronary artery stenting. *J Hosp Infect* 1998;38:154-5.
3. Bouchart F, Dubar A, Bessou JP, Redonnet M, Berland J, Mouton-Schleifer, et al. *Pseudomonas aeruginosa* coronary stent infection. *Ann Thorac Surg* 1997;64:1810-3.
4. Dieter RS. Coronary artery stent infection. *Clin Cardiol* 2000;23:808-10.
5. Leroy O, Martin E, Prat A, Decoux E, Georges H, Guilley J, et al. Fatal infection of coronary stent implantation. *Cathet Cardiovasc Diagn* 1996;39:168-70.