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SUCCESSFUL MANAGEMENT OF A RARE CASE OF INFECTED CORONARY STENT AND MYCOTIC ANEURYSM OF THE CORONARY ARTERY

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УСПЕШНО ЛЕЧЕНИЕ НА РЯДЪК СЛУЧАЙ НА ИНФЕКТИРАН КОРОНАРЕН СТЕНТ И МИКОТИЧНА АНЕВРИЗМА НА КОРОНАРНАТА АРТЕРИЯ

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Abstract. Stent infection is a rare but serious complication that can lead to significant morbidity and mortality. A 75-year-old man with a known history of diabetes underwent percutaneous coronary intervention (PCI) for coronary artery disease involving the right coronary artery (RCA). The patient presented to our hospital with stent infection and a subsequent pseudoaneurysm formation in the RCA. A multidisciplinary team decided on surgical intervention to manage stent-related infection. Infected stents were removed, the pseudoaneurysm was excised, and the RCA was reinforced. Additionally, the aortic valve was inspected and debrided. This case highlights the intricate management of complex coronary stent infections and the importance of a timely and coordinated multidisciplinary approach.

Key words: coronary artery disease, stent, infection

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Резюме. Инфекцията на стента е рядко, но сериозно усложнение, което може да доведе до значителна заболяемост и смъртност. 75-годишен мъж с известна анамнеза за диабет е претърпял перкутанна коронарна интервенция (PCI) за коронарна артериална болест, включваща дясната коронарна артерия (RCA). Пациентът постъпи в нашата болница с инфекция на стента и последващо образуване на псевдоаневризма в RCA. Мултидисциплинарен екип взе решение за хирургична интервенция за лечение на инфекция, свързана със стента. Инфектираните стентове бяха отстранени, псевдоаневризмата бе изрязана и RCA беше подсилена. Освен това аортната клапа беше инспектирана и дебридирана. Този случай подчертава трудното лечение на сложни сърдечно-съдови инфекции и значението на навременния и координиран мултидисциплинарен подход.

Ключови думи: коронарна артериална болест, стент, инфекция

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Introduction

Percutaneous coronary intervention is the mainstay in the management of coronary artery disease. While this interventional procedure has significantly improved patient outcomes, it is not without complications. Coronary stent infection (CSI) is a rare but potentially fatal complication characterized by colonizing bacteria or other microorganisms on the stent surface. It is known to occur in < 0.1% of individuals with stents [1]. Given the high morbidity and mortality associated with CSI, a multidisciplinary approach involving specialists from cardiology, infectious disease, and cardiac surgery is essential for optimal patient management.

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Case Presentation

A 75-year-old man with a history of diabetes mellitus presented with acute coronary syndrome in February 2024 and underwent percutaneous coronary intervention (PCI) for stenosis of the right coronary artery (RCA) at an outside hospital. One week post-PCI, he developed recurrent fever and was admitted multiple times and treated with Intravenous antibiotic therapy. Subsequently, the patient was referred to our hospital due to a persistent fever. On evaluation, transthoracic echocardiography revealed a mobile mass attached to the non-coronary cusp of the aortic valve, raising concerns for infective endocarditis or stent-related infection. Computed tomography coronary angiogram revealed the presence of a large pseudo-aneurysm in the proximal/mid-section of the stented RCA with surrounding aneurysmal abscess cavity (Fig. 1). Blood cultures grew Pseudomonas aeruginosa, leading to a diagnosis of coronary stent infection complicated by a mycotic aneurysm of the RCA. A multidisciplinary team meeting involving a cardiologist, cardiothoracic surgeon, infectious disease specialist, and physician was convened, and the decision was taken to perform surgical intervention. This was conveyed to the patient and his family, who were informed of the high procedure risk. Under general anesthesia, median sternotomy was performed, and the patient was placed on cardiopulmonary bypass with aorta-bicaval cannulation. Saphenous vein graft was anastomosed distally to the left anterior descending artery and distal right coronary artery after endarterectomy. The aorta was then cross-clamped, and cardioplegia was given to arrest the heart. The proximal RCA was opened and the infected stents removed (Fig. 2). The mycotic aneurysm was excised from the right coronary artery, and the abscess cavity was cleared. The laid open proximal RCA was then reinforced with Teflon pledgets. Aortotomy was performed to inspect the aortic valve. The aortic valve was inspected and found to be clear of infection.

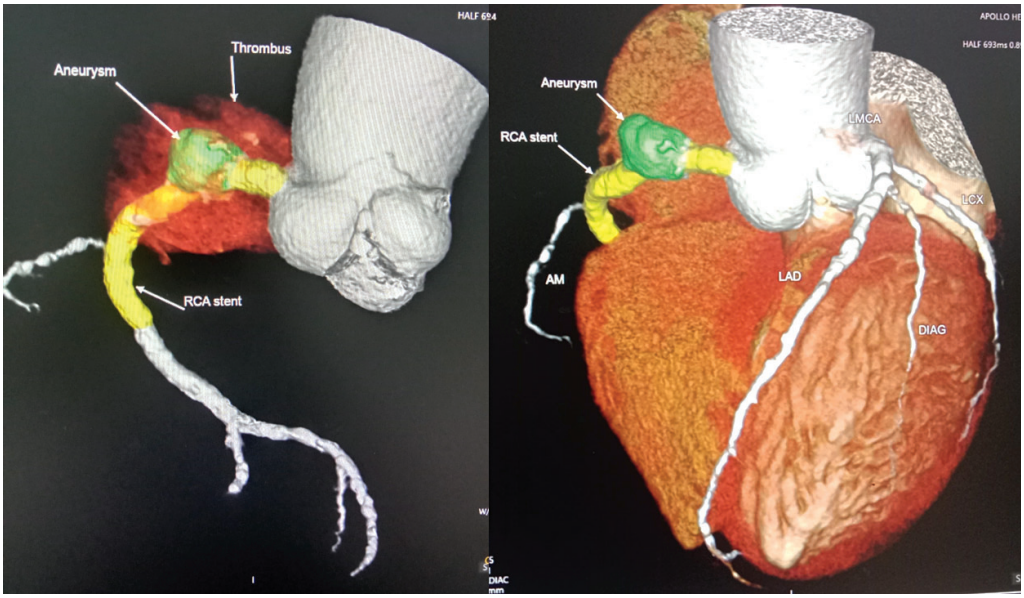

Fig. 1. Computed tomography coronary angiogram revealed the presence of a large pseudo aneurysm in the proximal/mid stented RCA with surrounding aneurysmal abscess cavity

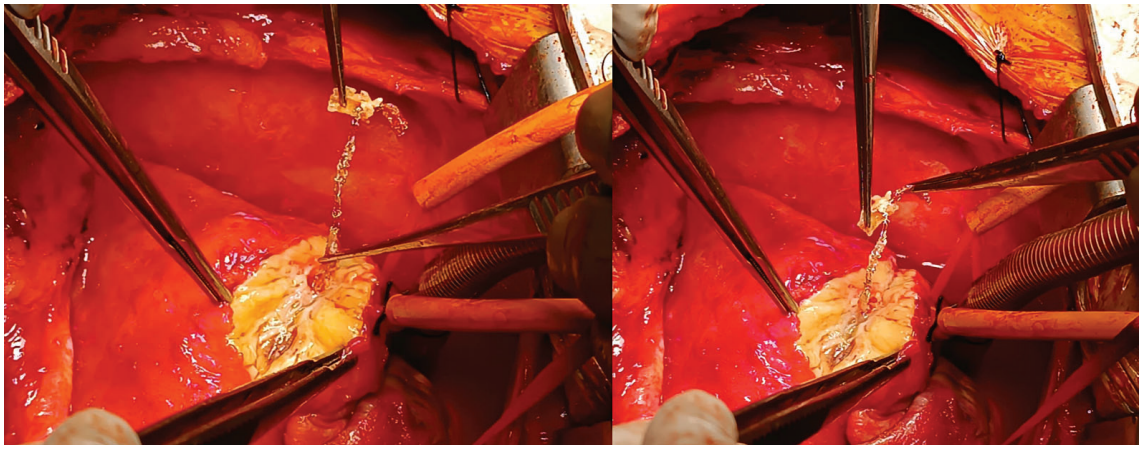

Fig. 2. Intraoperative image showing removal of the infected stent

However, some calcium deposits were removed. The heart was then rewarmed and restarted. The patient was weaned off cardiopulmonary bypass. The patient made a steady recovery with an uneventful postoperative period and was discharged home on the 8th postoperative day. The patient is on regular monitoring and remains symptom-free at 7-month follow-up.

Discussion

Coronary stent infections are a rare but serious complication following coronary artery stenting. It was first reported by Gunther in 1993 [2]. Despite advancements in stent technology and interventional cardiology, this condition remains a significant clinical challenge. The exact mechanisms underlying coronary stent infection are not fully understood, but several factors are implicated. Infected coronary stents commonly contain Staphylococcus aureus (80%) and Pseudomonas aeruginosa (20%) [2]. These bacteria adhere to the stent surface, forming a biofilm. This biofilm provides a protective environment for bacterial growth and resistance to antibiotics. The implantation of a foreign body (stent) triggers an inflammatory response. This creates a favorable environment for bacterial colonization and biofilm formation. A recent systematic review found that drug-eluting stents (DES) were the most frequently reported stents associated with infections, followed by bare metal stents and a combination of drug-eluting and bare metal stents [3]. The rise in DES-associated infections is most likely due to their immunomodulatory effects [4]. Stent mal-apposition, thrombus formation, and disturbed blood flow can contribute to the development of infection by creating areas of stasis where bacteria can accumulate. Other risk factors include poor sterility, repeated use of the local site for stent placement, repeated re-use of hardware such as balloons, catheters, multiple guidewire manipulations, and prolonged indwelling catheterization [5]. Patients typically present with recurrent or persistent chest pain, fever, elevated inflammatory markers (C-reactive protein, erythrocyte sedimentation rate), and signs of systemic infection. Symptoms usually appear within a week after the procedure, and most diagnoses are made within a month of the intervention. Mycotic infections are seen in 60% of cases [6]. The diagnosis of coronary stent infection is challenging due to its rarity and nonspecific symptoms. Clinical suspicion is warranted. A diagnosis may be considered if at least three of the following conditions existed: recent coronary stent implantation (< 4 weeks), repeated procedures using the same artery access point, signs of infection without another explanation, symptoms of a heart attack, and abnormal heart results from imaging tests [7]. The management of coronary stent infection requires a multidisciplinary approach. Choice of antibiotic therapy is based on culture. Anti-inflammatory and antiplatelet agents are used to prevent stent thrombosis. Stent removal or exchange may be considered. The mortality associated with coronary stent infection ranges from 40-65%; some cases may necessitate immediate surgical intervention [8]. Our patient was managed with surgical removal of the infected stent and bypass using a saphenous venous graft. Prevention of coronary stent infections hinges on rigorous adherence to aseptic protocols throughout the procedure and meticulous post-procedural care. During the intervention, strict sterile practices, including proper hand hygiene, sterile draping, and the use of sterilized equipment, are paramount. Minimizing procedural duration and maintaining glycemic control further reduces infection risk. Post-procedure, meticulous wound care, patient adherence to antiplatelet therapy, and vigilant monitoring for signs of infection such as fever and chest pain are necessary. Early detection of infected stents, if any, through blood cultures and imaging techniques, eg, computed tomography and magnetic resonance imaging, coupled with a multidisciplinary approach involving cardiologists, surgeons, infectious disease specialists, and microbiologists, ensures prompt management. In severe cases, immediate surgical intervention with broad-spectrum antibiotic coverage may be necessary.

Conclusion

This case highlights the severe and potentially fatal consequences of coronary stent infection, emphasizing the need for early diagnosis, prompt multidisciplinary management, and aggressive surgical intervention. Complete removal of the stent and the infected cavity is essential for a successful outcome.

No conflict of interest was declared

References

1. Lim MJ. Complications of Percutaneous Coronary Interventions. The Interventional Cardiac Catheterization Handbook. 4th edition. Elsevier Inc.; 2018. 261-285.

2. Günther HU, Strupp G, Volmar J et al. Coronary stent implantation: infection and abscess with fatal outcome. Z Kardiol. 1993;82:521-525.

3. Suryawan IGR, Luke K, Agustianto RF, Mulia EPB. Coronary stent infection: a systematic review. Coron Artery Dis. 2022;33(4):318-326. doi:10.1097/MCA.0000000000001098.

4. Bosman WM, Borger van der Burg BL, Schuttevaer HM et al. Infections of intravascular bare metal stents: a case report and review of literature. Eur J Vasc Endovasc Surg. 2014;47:87-89.

5. Reddy KVC, Sanzgiri P, Thanki F, Suratkal V. Coronary stent infection: Interesting cases with varied presentation. J Cardiol Cases. 2018;19(1):5-8. Published 2018 Sep 12. doi:10.1016/j.jccase.2018.08.004.

6. Ramakumar V, Thakur A, Abdulkader RS et al. Coronary Stent Infections – A Systematic Review and Meta-Analysis. Cardiovasc Revasc Med. 2023;54:16-24. doi:10.1016/j.carrev.2023.02.021.

7. Dieter RS. Coronary artery stent infection. Clin Cardiol. 2000;23(11):808-810. doi:10.1002/clc.4960231129.

8. Buono A, Maloberti A, Bossi IM et al. Mycotic coronary aneurysms. J Cardiovasc Med (Hagerstown) 2019;20:10–15.