

Case Report

AN UNUSUAL CASE OF PROLONGED PYREXIA OF UNKNOWN ORIGIN POST ENDOVASCULAR ANEURYSMAL REPAIR

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ABSTRACT

Abdominal aortic aneurysm is a frequently encountered disease. Repair of aortic aneurysms is usually done in the event of an emergency setting or electively based on few laid down indications. The repair may be done either through a traditional open surgical method or with the help of endovascular techniques. Endovascular aortic aneurysm repair is generally preferred over for its advantages and high success rate. Though it has gained immense popularity over the last decade, it is not free of complications, one of which is “post implantation syndrome” (PIS). PIS generally presents with post procedure febrile illness, which is usually managed conservatively. Fever, generally following any surgical procedure is an expected adaptation of the body’s immune mechanism to combat the stress. Hence PIS may mimic the wide array of causes of post procedural febrile illness, prompting a flurry of unwarranted investigations. Here we report one such case of prolonged post procedural febrile illness following aneurysmal repair, thereby highlighting the fact that the simple diagnosis of PIS should be borne in mind, before ordering expensive investigations to narrow down on improbable diagnosis.

Keywords: Endovascular Aneurysmal Repair, Post Implantation Syndrome, Systemic Inflammatory Response Syndrome

INTRODUCTION

Aortic aneurysm is a pathological dilatation of the aorta caused by degenerative changes in its wall leading to inflammation, weakness of aortic tissue, loss of elasticity and permanent dilatation of aorta. Abdominal aortic aneurysms are located below the diaphragm and above the bifurcation of common iliac arteries. Abdominal aortic aneurysm is a frequently encountered disease. The management of abdominal aortic aneurysm is three pronged namely, wait and watch policy if the abdominal aortic aneurysm is not symptomatic or of small size (i.e. < 5.5 cm in diameter), open surgical aneurysm repair and endovascular stent insertion. Surgical treatment of non ruptured abdominal aortic aneurysm is associated with mortality of 1.4 to 7.6% reaching 10% with symptomatic aneurysms.

With the introduction of percutaneous placement of endoluminal stent grafts, major surgery and related morbidity and mortality have been avoided. It is a less invasive procedure needing very few days for post operative recovery. The minimally invasive nature of the procedure also is more appealing when compared to open surgical repair, when taking the pain factor into consideration. Though the procedure may seem attractive, appealing to many doctors, this procedure is not without its complications. Needless to say extensive training is generally required for performing such procedure with minimal complications. After, endovascular aortic repair, systemic inflammatory reaction can occur and this condition is known as post implantation syndrome (PIS). It is characterized by fever, raised C - reactive protein, raised white blood cell counts and negative blood cultures. Though this condition may masquerade a host of other inflammatory conditions, the treatment of post implantation syndrome is fairly straight forwards with assurance, antipyretics and basic supportive care helping the patient tide over the troubled waters.

CASES

A 59yrs old gentleman, with diabetes and hypertension as comorbid illness, presented to us with history of low grade fever, anorexia and generalized weakness for the last 4 months. Past medical history revealed that he was evaluated for complaints of urinary tract infection elsewhere. During evaluation ultrasound abdomen showed bilateral polycystic kidneys. He then underwent a CT scan of the abdomen

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which revealed an abdominal aortic aneurysm. CT aortogram showed large infrarenal aortic aneurysm with ulceration of distal arch and suprarenal portion. The maximum diameter measured was 65mm with circumferential peripheral thrombus.

In view of his polycystic kidney disease with chronic renal failure and high risk of permanent kidney damage and dialysis dependence, the patient was admitted for endovascular aortic aneurysm repair. The procedure was done uneventfully under general anesthesia. An endoluminal polyesteric stent graft was used. Post procedure patient was admitted to a high dependency unit for close monitoring. Within 12hrs of the procedure, patient developed high grade fever with rigors, blood and urine cultures were taken, and blood counts were done. Patient was treated with antipyretics. Counts were within normal limit and cultures were negative. Patient was discharged home after his fever settled.

However within 3days his fever relapsed and he was readmitted. Investigations showed elevated CRP, while the WBC counts were normal. Repeat cultures were also negative. He underwent CT abdomen which showed only medico-renal disease, renal cortical cyst and normal aortic stent graft. Quantiferon gold test was done which came as negative. Bone marrow cultures were also negative. Vasculitis screen was done in which ANA, DS-DNA, P-ANCA, C-ANCA which were also negative. After discussing with family, empiric anti-tuberculosis treatment was started under steroid cover. Patient was discharged although he continued to have mild fever.

He subsequently presented to us again history of persistent fever, anorexia and weakness for the last 4 months. Investigations showed raised CRP, normal WBC counts and negative cultures. Based on the past history of endovascular aortic aneurysm repair, his persistent fever and raised CRP was diagnosed to have post implantation syndrome. He was treated symptomatically with antipyretics and steroids. Anti-tuberculosis treatment stopped. He was kept under close surveillance. Within 3 months his symptoms subsided and his condition improved.

DISCUSSION

In this era of minimal access approach to treatment of patients, endovascular techniques have fast become the standard mode of care in many fields of medicine. Endovascular treatment of abdominal aortic aneurysm (EVAR) is one such minimally invasive modality which has almost replaced open surgical correction to a large extent. This procedure may sometimes produce a systemic inflammatory response called “post implantation syndrome” (PIS). This paper presents a rare case of PIS, presenting with prolonged PUO which have provoked us to do multiple investigations, though all that was required finally was only the best supportive care. It was first described by Valazquez *et al.*, (1999). The incidence of PIS has been estimated to be around about 10 – 60%. This condition generally presents with fever, leukocytosis, elevated C –reactive protein and coagulation disturbances (Swartbol *et al.*, 2001).

There are three main mechanisms leading to PIS are namely, injury to the vascular endothelium during the procedure, Manipulation of the introducer catheters and sheaths inside the aneurysmal thrombus and the endograft material used and biological response.

Mechanical injury due to balloon angioplasty and stenting can result in complex inflammatory reactions. Though the primary inflammatory cells are leukocytes, platelets too release a number of inflammatory mediators. Manipulation in the aneurysmal thrombus can cause WBC activation and inturn release of various cytokines. It has been found that the WBC count, C Reactive Protein and IL-6 levels are higher in the EVAR group when compared to patients undergoing open surgery (Morikage *et al.*, 2000). It has also been found that intraluminal thrombus left inside after EVAR contains high levels of IL-6. Few studies have explored the impact of nature of the endograft material on biological response. In one such study, it has been implicated that the use of stent grafts based on woven polyester was independently associated with a strong inflammatory response (Voute *et al.*, 2012). In another study, there was a significant difference for fever and serum concentration of IL-6 between patients receiving polyester vs. an expanded PTFE stent graft (Gerasimidis *et al.*, 2005).

On a serious note, sometimes the biological response following EVAR may not always spontaneously attenuate and could lead to the development of systemic inflammatory response syndrome (SIRS) even

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after several post op days. In a retrospective analysis of 66 patients undergoing EVAR, 66% of the patients met the SIRS criteria within the first 5 post operative days (De La Motte *et al.*, 2011). In another paper, the readmission rates following EVAR within the first 30 days post EVAR was 3% who developed SIRS (Arnaoutoglou *et al.*, 2010).

Thus the condition of PIS, Post endovascular aneurysmal repair should be borne in mind. Though this condition may present with transient raise of temperature, it may sometimes result in prolonged duration of illness. Diagnosis is generally a procedure of exclusion, though empirical treatment with a multitude of drugs should be avoided.

Conclusion

Endovascular aortic aneurysmal repair though has several benefits; the complications associated with the procedure are seldom studied. The syndrome of PIS though not rare, is often ignored and diagnosed at the very end after exhausting many a wasteful investigatory modalities and drug treatment. This paper highlights this condition and also stresses the fact that prolonged pyrexia of unknown origin (PUO) may also be one of the presenting feature post EVAR.

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