



BMH Med. J. 2017;4(2):44-46 **Editorial**

Vaccine Associated Myocarditis

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Abstract

Most of the cases of vaccine associated myocarditis have been following small pox vaccination. Reports have also been there after streptococcal pneumonia vaccine and influenza vaccine. In some cases, autoimmune/inflammatory syndrome induced by adjuvants (ASIA) used in the vaccine have been implicated. Exclusion of other causes is very important in the diagnostic process, especially that of acute coronary syndrome. Management is similar to that of other etiologies of myocarditis. These rare instances of myocarditis should not preclude one from taking necessary immunization for vaccine preventable diseases.

Key Words: vaccine associated myocarditis; small pox vaccination

Vaccine associated myocarditis came into the limelight in 2003 when several cases of myocarditis were reported in health care workers and military personal, who were given small pox vaccine in an attempt prepare the United States in the event of a terrorist attack using small pox [1]. Over twenty five thousand health care workers were given small pox vaccine in the first quarter of 2003. Seven cases of cardiac adverse events were recorded in civilians who received the vaccine and 10 cases of myopericarditis in military personnel. Centers for Disease Control and Prevention (CDC) went on to give a directive that those with a known cardiac ailment may be excluded from this vaccination program. Post vaccination myocarditis has been reported as early as 1957, in the initial era of small pox vaccination [2].

Though small pox vaccination is currently seldom done in most parts of the world, reports of vaccine associated myocarditis are not restricted to small pox vaccination. Several instances of vaccine associated myocarditis for different vaccines have been documented [3,4,5].

Makaryus AN and associates described recurrent viral myocarditis and vaccine associated myocarditis [3]. The vaccine which was implicated in their report was streptococcal pneumonia vaccine.

One death in a three month old infant due to vaccine strain infection and myocarditis has been documented in the early period of oral polio vaccination [5]. In this case, vaccine strain polio virus was isolated from the myocardium.

Small pox vaccination associated myocarditis may present with features suggestive of acute coronary syndrome, with chest pain electrocardiographic changes and elevated cardiac enzymes [6]. This may occur about 2-4 weeks after the vaccination and can be a challenging scenario for an accurate diagnosis in the emergency department. Presence of coronary risk factors and regional wall motion abnormalities on echocardiography may favour a diagnosis of acute coronary syndrome [7]. It has been further suggested that vaccine associated myocarditis is more likely with the newest smallpox vaccine [8].

Among the almost half a million military persons who received small pox immunization, there were two confirmed cases and 50 probable cases of myopericarditis [9].

Vaccinia (small pox vaccination) associated myocarditis is thought to be inflammatory in nature and non steroidal anti inflammatory drugs have been recommended for relief of pain due to pericarditis which often occurs along with it [9]. Heart failure and arrhythmias due to myocarditis may be managed similar to that in other conditions causing these. Though steroids and immunosuppressive medications have been used in isolated cases, benefits have not been proven by case-control studies [10].

Autoimmune/inflammatory syndrome induced by adjuvants (ASIA)

The mechanism of vaccine induced myocarditis need not be directly related to the active component of the vaccine. It could also be autoimmune/inflammatory syndrome induced by adjuvants (ASIA). ASIA may be triggered by Human papilloma virus vaccine and Hepatitis B vaccine [11,12], though myocarditis has not been reported in these cases. MF59 adjuvant in Flud seasonal influenza vaccine has been recently associated with a case of severe myositis and myocarditis [4]. Myocarditis with high Troponin I levels and rhabdomyolysis with very high creatine kinase (CK) levels were documented. Rhabdomyolysis was managed by fluid resuscitation until early features of pulmonary edema were noted. Pulmonary congestion responded well to single dose of frusemide. Diagnosis of myocarditis was confirmed by cardiac magnetic resonance imaging done on day four. Troponin and CK levels almost normalized in 5 days.

Summary

Vaccine associated myocarditis is a very rare but potentially life threatening condition. Meticulous evaluation for exclusion of other causes is needed before considering the possibility. Management is on similar lines as myocarditis of other etiologies. Some cases may have persistent left ventricular dysfunction and potentially progress to dilated cardiomyopathy. Yet the rare entity of vaccine associated myocarditis should not preclude one from taking necessary immunization against important vaccine preventable diseases.

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