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Case Note

Injection drug use and tricuspid valve endocarditis

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Abstract
Tricuspid valve endocarditis is more common in injection drug users. Pulmonary valve and Eustachian valve endocarditis have been reported but are very rare. Earlier reports of endocarditis in injection drug users emphasized the dominance of right sided involvement. In a series of 105 patients 86 % were right sided and 14 % had left sided involvement. We report a case of isolated tricuspid valve endocarditis in an injection drug user affecting a structurally normal heart and review of the literature on this subject.

Key Words: injection drug use, tricuspid valve endocarditis

Infective endocarditis is a microbial infection of endothelial surface of heart and great vessels. Usually left sided valves mitral and aortic valves are more commonly involved. Ninety two percent involvement is in left sided valves while 8% in the right sided valves.[1] Tricuspid endocarditis is more common in injection drug users. Pulmonary valve and eustachian valve involvement have been reported but very rare. Earlier report of endocarditis in injection drug users (IDUs) emphasized the dominance of right sided involvement. In a series of 105 patients 86% were right sided and 14% had left sided involvement.[2] We report a case of isolated tricuspid endocarditis in an injection drug user affecting a structurally normal heart and review the literature on this subject.

Case Report

A 35 year old male assistant-health worker by profession and an injection drug user since last 10 years presented to KMCTH on 31-5-061 with h/o intermittent fever, dry cough and loss of weight. Fever was associated with chills and rigor.

On examination he was very pale, febrile and had moderate pedal oedema and generalized body swelling and bilateral basal crepts. He also had hepatosplenomegaly with liver span being16 cm. and spleen 3.5 cm BLCM.

Investigation of the case revealed Hb- 7gm%, ESR 65mm/1st hr, TC 9900/mm^3, N-84 L16 %, HIV negative, HBsAg and HCV negative. Serum electrolytes were normal. Three blood culture samples from 3 different sites were taken but all of them revealed no growth. USG revealed liver 16 cm and spleen 17 cm. Chest x-ray and sputum examination revealed nothing significant.

Echocardiography revealed ejection fraction 66%, mild TR (Fig. 2) and vegetation (Fig. 1) measuring about 2 cm in the tricuspid valve with minimal pericardial effusion. Tricuspid valve endocarditis was diagnosed on the basis of Dukes criteria.

Further investigation revealed BUN 136mg/dl, Creatinine 3.9mg/dl, total protein 7.1 gm/dl and albumin 3.8 gm/dl. Urine revealed albumin ++.

Central line was opened from subclavian vein as all the peripheral veins were thrombosed. He was treated with penicillin and gentamycin initially but as the renal function deteriorated with rising creatinine and BUN, inj. ceftriaxone 2gm i/v given for 10 days. As the temperature did not subside inj. cephazoline was started. Patient died because of deteriorating renal failure and heart failure.

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Fig. 1 Vegetation in Tricuspid Valve

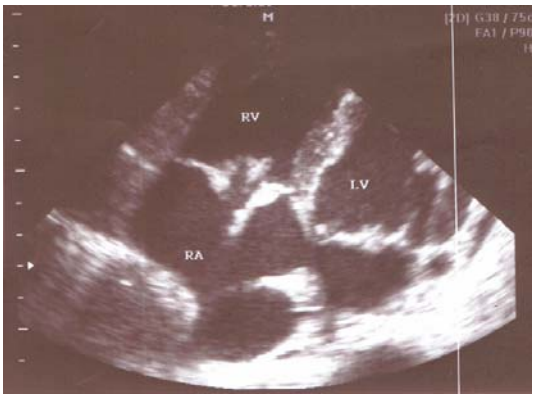
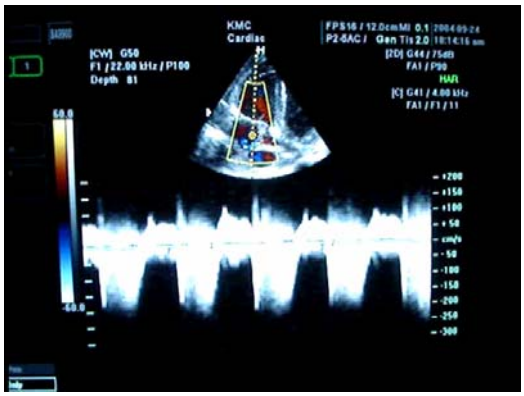


Fig. 2 Spectral display of CW Doppler across the tricuspid valve (mild TR)



Discussion

Injection drug users (IDUs) are very much susceptible for infective endocarditis. [3,4,5] Out of 116 hospitalized cases of infective endocarditis from 1994-2000 at Inner Vancouver University affiliated hospital, 63% were injection drug users and right sided accounted for 10% of all inf. endocarditis in population based surveys[6], and higher proportion of IE in IDUs. Right sided IE is an overwhelmingly a disease of IDUs. Although it has been seen to occur in congenital heart disease and instrumentation of right heart. Among the IDUs presenting with fever 13 % will have echocardiographic evidence of IE.[4]

The pathogenic mechanism that explains the increased prevalence of right sided IE in IDUs are not fully elucidated. Damage to the right sided valve from injected particulate matter in the setting of injected bacterial load is thought to be important and immune function abnormality may have role in pathogenesis.[2]

Earlier reports reveal the equal incidence of right sided and left sided endocarditis.[7] Some reports emphasized the dominance of right sided involvement.[8] But in a series of 105 patients of infective endocarditis in IDUs 86% were right sided and 14% were left sided.[2]

Tricuspid valve is most frequently involved followed by mitral and then aortic valve. Concurrent involvement of left and right sided valve is not infrequent. In right sided infective endocarditis it is almost always tricuspid valve which is involved. In one study of IDUs vegetation were found in tricuspid valve in 127 episodes, pulmonary valve in 4 and both valve in 1 instance.[9] In a review of right sided endocarditis 85 to 86 cases were found to involve tricuspid valve and only one involving pulmonary valve.[7] But a rare location of right sided vegetation attached to the muscular bundle of the right ventricle is also reported. TEE clearly showed 1.8 cm vegetation attached to muscle bundle.[10] Usually there is high incidence of right sided valvular infection in endocarditis of IDUs. In various series tricuspid valve involvement is found to be 60-70% of cases. The aortic and mitral involvement is 30-40% cases. More than one valve in either side may be infected simultaneously. Pulmonary valve infection occurring only in 2 % of cases.[11] Staphylococcus aureus is the dominant organism in most of the series about 70% cases of endocarditis. Remainder of infections are caused by Streptococci mainly and Pseudomonas and then less frequently by organism like Candida parapsilosis and other Candida.[2,11]

Blood culture is positive in high proportion of right sided IE. When culture negative it is usually as a result of antibiotic use before the drawing of blood or Bartonella infection.

The reported prevalence of HIV in right sided infection is variable. In Spanish series of IDUs with IE, 76% were HIV positive.[12] In another series of 100 consecutive injection drug users with suspected endocarditis 58 were HIV positive.[13] Advanced HIV infection is probably a risk factor for IE.[14] Septic pulmonary embolism is the most important complication of right sided infective endocarditis. Besides, pulmonary infarction, pulmonary abscesses, bilateral pneumothoraces, pleural effusion and empyema are also frequently noticed.[2]

Emperical treatment is combination of inj. Penicillin and aminoglycoside and oxacillin or nafcillin before

the culture result is available.[15] However, because of deteriorating renal condition, aminoglycoside was withdrawn and 3rd generation cephalosporin was given in this case.

Surgery could not be advised because of moribund condition of the patient. Ultimately the patient's condition worsened and we lost him. Though the organism was not isolated our findings in this case satisfied the Duke's criteria.

Conclusion

Tricuspid valve endocarditis is the more common in injection drug users. IDUs with prolonged fever should undergo echocardiography to look for the vegetation and destruction of valve.

Reference

1. Pachirat O, Chetchotisakd P, Klugboonkrong V, Tawelsangsuksakul P, Tantisivin C, Loapibon M. Infective endocarditis: prevalence, characteristics and mortality in khon kaen,….. 1990-1999., J. Med. Assoc. Thai 2002 Jan; 85 (1): 1-10
2. Ross Moss, Brd Munt.; Injection drug use and right sided endocarditis; Heart 2003; 89: 577-581
3. El-Khatib MR, Wilson FM Lerner AM. Characteristics of Bacterial Endocarditis in heroin addicts in Detroit. Am J Med Sci 1976; 271: 197-201
4. Weiss AB, Heller DR, Schimenti RJ etal. The febrile parenteral drug user: A prospective study in 121 patients. Am J Med 1993; 94:274-280
5. Carrel T, Schaftner A, Vogt P, etal. Endocarditis in intravenous drug addicts and HIV infected patients; possibilities and limitations of surgical treatment. J Heart Valve Disease 1993; 2:140-147
6. Hoen B, Alla F Selton Suty C, etal Changing profile of infective endocarditis, results of 1-year survey in France. JAMA 2002 ; 288:75-81
7. Mathew J, Addai T, Anand A, etal, Clinical features, site of involvement, bacteriological findings and outcome of Infective Endocarditis in Intravenous drug users, Arch Int Med 1995; 155: 1641-8
8. Crare LR, Levire DP, Zervos MJ, etal. Bacteremia in narcotic addicts at the Detroit Medical Centre. Microbiology, epidemiology, risk factors and empiric therapy. Rev. Int. Dis. 1986; 8: 364-73
9. Hectit S, Berger M, Right sided endocarditis in intravenous drug users, prognostic features in 102 episodes. Ann Internal Medicine. 1992; 117: 560-6
10. Casson S Kevorkian JP, Milliez P, etal. A rare localization in right sided endocarditis diagnosed by echocardiography. Cardiovascular Ultrasound. 2003 Aug 14; 1 (1):10
11. Merle A. Sande, Mrinkak / Jeff A. Infective endocarditis. inValentin F R. Wayne A, etal eds Hurst's The Heart. 10th edition. Mc Graw – Hill 2001. Vol. 2; 2087-2125
12. Ribera E, Miro JM, Covtes E, etal. Influence of Human Immunodeficiency Virus Infection and degree of immunosuppression in the clinical characteristics and outcome of Infective Endocarditis among injection drug users. Arch. Intern. Med 1998; 158: 2043-50.
13. Palepu A, Cheung SS, Montessori V etal. Factors other than Duke's criteria associated with infective endocarditis among injection drug users. Clin invest Med 2002; 25 : 118-25
14. Wilson LE, Thomas DL, Astemborski J, etal. Prospective study of infective endocarditis among the injection drug users. J. Infect. Dis. 2002; 185: 1761-6
15. Barry M, Thomas M. Infective endocarditisIn Lawerence M, Tierney JR, Stephen J. eds, Current Medical Diagnosis and Treatment 42nd edition. Mc Graw Hill 2003, 1361-1366.