CAPD As A Bridge To Transplantation In A Young Lady With Jugular Line Related Acute Endocarditis

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Abstract: An 18 years young Fijian lady, developed internal Jugular line related acute culture negative Endocarditis. She was successfully treated with CAPD until recovery of right sided endocarditis as shown by repeat echocardiography and remission of fever. She subsequently underwent a live related renal transplantation from her mother with no allograft dysfunction and no recurrence of endocarditis.

Key words: Internal Jugular access, Infective endocarditis, CAPD, Transplantation

Introduction:
Infective endocarditis (IE) in patients receiving HD has been reported for the first time in 1966[1]. It is now well known that IE in HD is significantly more common and causes greater morbidity and mortality than in the general population, being second only to cardiovascular disease as the leading cause of death in this group of patients[2,3,4]. Because of the peculiarity of this subset of patients, it has been recently proposed to add a fifth category (health-care-associated and HD-associated IE) in the actually four categories classification of IE (namely, native valve IE, prosthetic valve IE, IE in eustachian valve drug users, and nosocomial IE)[5,6].

Case Report:
An 18 years old, female patient, End Stage Renal Disease (ESRD) with Hypertension, was on maintenance haemodialysis using temporary right internal jugular double lumen catheter for 9 months. She was referred for renal transplantation with her mother as donor on 10/6/2011. She had normal menstrual cycles. She was negative HIV, hepatitis B, hepatitis C viral infection although CMV IgG was positive.

There were flow related problems with internal jugular line and this has to be changed frequently due to poor flow and fever. Other key issues were related to catheter clotting, fever and blood cultures were negative for all 7 times for bacteria and fungi.

Trans esophageal echo (TEE) which was done on 1/7/2011 showed a prominent, freely mobile eustachian valve, seen at inferior vena cava and right atrial junction, extending into right atrium. At superior vena cava and right atrial junction, a thickened, long nodular mass, which was a vegetation with increased echogenicity was seen. She also developed purpuric maculo papular skin rashes in the face, thorax and abdomen. Lupus workup was negative. Has her WBC count should leucopenia,(Table 1). She was given injection GMCSF on subsequent 4 days of 300mcg each.

Peripheral smear study should severe anisocytic anisochromic anemia with decreased RBC count and polychromasia and severe leucopenia with relative neutropenia. She had relapsing fever despite of antibiotics including injection vancomycin. She was treated as culture negative endocarditis with injection vancomycin 1gm iv once weekly and injection gentamycin 250mg iv for 4 weeks, from 18.06.2011 to 15.07.2011. Coagulation workup was done and doppler study of aorta, inferior vena cava and iliac vessels showed thrombosis of left external iliac vein. In view of ongoing fever, jugular line was removed and Swan neck Tenckhoff double cuff PD catheter was implanted on 12.07.2011 and she was dialyzed with low volume supine PD and then switched over to CAPD. She continued on CAPD with 2L X 4 exchanges using dianca l solution. Pre Transplant echo on 01.08.2011 showed no obvious vegetation and she had complete remission of fever for two weeks (figure 1 and 2). Renal Transplantation was done on 18.08.2011 from her mother with HLA mismatch B locus 1. Pre transplant PRA was 27.5%. She was inducted with single dose of simulect 20mg IV on the day of surgery. Her graft functioned well and her PD catheter was removed on 26.08.2011. She had an uneventful post transplantation course and her current medications were prednisolone – 10mg OD, tacrolimus 6mg BD, mycofenolate
Table 1: Shows Complete Blood Counts:

<table>
<thead>
<tr>
<th>Date</th>
<th>Hemoglobin (g/dl)</th>
<th>Platelets (lakh/cmm)</th>
<th>WBC (cells/cmm)</th>
<th>Polymorphs (%)</th>
<th>Lymphocytes (%)</th>
<th>Monocytes (%)</th>
<th>Eosinophils (%)</th>
<th>PT (sec)</th>
<th>APTT (sec)</th>
<th>INR</th>
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<td>27.06.2011</td>
<td>6.1</td>
<td>1.27</td>
<td>3700</td>
<td>67.1</td>
<td>25.5</td>
<td>5.5</td>
<td>1.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30.06.2011</td>
<td>5.7</td>
<td>1.12</td>
<td>1200</td>
<td>53.1</td>
<td>37.5</td>
<td>5.2</td>
<td>4.2</td>
<td>13.1</td>
<td>25.0</td>
<td>1.12</td>
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<tr>
<td>01.07.2011</td>
<td>5.6</td>
<td>-</td>
<td>1400</td>
<td>35.0</td>
<td>52.2</td>
<td>7.0</td>
<td>-</td>
<td>20.92</td>
<td>1.78</td>
<td></td>
</tr>
<tr>
<td>04.07.2011 (after Inj.GMCSF)</td>
<td>5.8</td>
<td>1.34</td>
<td>4300</td>
<td>72.3</td>
<td>10.1</td>
<td>4.2</td>
<td>-</td>
<td>-</td>
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</tr>
</tbody>
</table>

Figure 1: ECHO showing Vegetation

Figure 2: Pre-Transplant ECHO showing no obvious vegetation

Discussion:

The diagnosis of infective endocarditis (IE) in the HD population is often difficult to manage and to distinguish from that of an uncomplicated access infection[7]. Furthermore, the diagnosis of IE in HD patients using the Duke criteria[10,11] could be problematic. The use of Duke criteria in this group of patients has indeed some limitations; first, they require the presence of bacteraemia in the absence of a removable focus of infection for diagnosing IE. However, many HD patients have a vascular access device in situ and hence a potential primary focus of infection precluding diagnosis of bacteraemia from being a major criterion[2,4,8]. Second, fever, another component of the Duke criteria, is present less commonly in HD patients (45–70%) than in the general population (80–90%), probably due to uraemia-related impaired cellular host defence[4]. Although the absence of fever has high negative predictive value for a diagnosis of IE in the general population,[10] it is not a useful diagnostic feature in HD patients. Therefore, it is questionable to apply the Duke criteria in their strictest form to HD patients, since they could under-diagnose IE. Furthermore, other signs commonly accompanying an infectious disease in the general population are not helpful in this subset of patients; some of these, such as increased erythrocyte sedimentation and anaemia, are already present in ESRD, whereas others, such as haematuria,
may be specifically absent[12]. Increased sensitivity of transoesophageal echocardiography (TEE) in detecting vegetations and IE-related complications, TEE should be always performed as a means of diagnostic work-up in any chronic HD patient with high clinical suspicion such as presence of new-onset congestive heart failure, other stigmata of endocarditis including fever, development of HD-related hypotension, particularly in a previously hypertensive patient, past episodes of IE, prior valvular surgery.

Temporary vascular access is the likely source of bacteraemia in most cases, right-sided endocarditis as in our patient with recurred fever and culture negative situation should warrant investigation including TEE and repeat blood cultures. IE is unusual in the HD population,[7] mitral valve is involved in up to 50% and the aortic valve in 40% are the most commonly affected valves.[2,4,9] Simultaneous involvement of the aortic and mitral valves is also relatively frequent, occurring in 20%.[9] Alterations of laminar flow caused by degenerative left-sided heart valves disease might lead to an increased susceptibility for IE, explaining these findings.

In our patient who was previously healthy, right sided endocarditis is probably due to line related sepsis in the absence of history of any previous intravenous drug abuse. She denied any significant dental and gingival complication or intervention. An algorithm showing work-up infective endocarditis is shown in figure 3. Typical organisms for IE (i.e. Staphylococcus aureus, coagulase-negative Staphylococcus, Enterococcus species, and Streptococcus species) as causative pathogens were not identified despite repeat blood culture in our patient which may be due to prior antibiotic use.

The switch over to peritoneal dialysis by using permanent PD catheter was the only option left which proved to be the bridge for renal replacement therapy while waiting for the transplantation in our patient. There could be several reasons for her leucopenia in presence of infective endocarditis. However response colony stimulating factor was dramatic which facilitated her recovery from endocarditis. Mother being the donor and having sensitization with a PRA of 27.5%, induction with simulect helped in prevention of acute rejection as there was very little mismatch with maternal donor. Infection can precipitate rejection through up regulation of class II antigen and in our patient with complete HLA match in the class II region, she had smooth post transplant course with good allograft function. Previous large data base showed advantages of peritoneal dialysis in patients undergoing transplantation[13].

The induction therapy and maintenance immunosuppressive therapy should be closely monitored in this particular group of patients with previous endocarditis to prevent recurrence and complication.

Conclusion:

We present a young Fijian lady who developed internal jugular line related acute culture negative Endocarditis, who was successfully treated with CAPD and subsequently underwent a live related Renal Transplantation from her mother with no adverse consequences.

References:


