Approach to Fever in Dialysis Patients

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Dear Sir,

As infections are the second most common cause of death in patients undergoing dialysis, there is interest for clinicians dealing with renal diseases in the causes and management of fever in patients with renal failure and dialysis who are especially susceptible to various infections [1,2]. The aim of this letter is to find an empirical approach to fever in dialysis patients.

Two retrospective series from two different hospitals in Cologne were compared: the first consisted of 311 unselected patients with fever as the main problem [3], and the second comprised 166 patients with renal failure undergoing dialysis, who were treated for fever either on admission or as a major problem during their hospital stay.

The causes of fever in the two case series are listed in table 1.

Although comparison of experiences from two different hospitals may be critical because the center effect should be considered, the results were consistent with other reports on fever or infection in patients with renal failure and dialysis [4-8] which illuminate a practical approach to fever in dialysis patients: (1) The most common causes of fever in patients with renal failure and dialysis were ('the big three') infections of the bronchopulmonary system, urinary tract or at the dialysis access site; these account for more than 70%. (2) There was an important preponderance of bacterial infections in dialysis patients. The most common bacteria isolated are staphylo-cocci, gram-negative bacilli, streptococci, and, rarely, *Listeria monocytogenes* or *Mycobacterium tuberculosis*. (3) Whereas neoplastic and vasculitic disorders were considerable causes of fever in the unselected patient group, these diseases were unlikely in febrile dialysis patients unless there was an underlying disease such as familial mediterranean fever or Wegener's granulomatosis. (4) Various causes in patients with renal failure and dialysis were late transplant rejection, peritonitis, wound infection, subcutaneous abscess, endocarditis, diverticulitis, spondylodiscitis, or tuberculosis. (5) In a significant amount of patients, the cause of fever could not be explained because fever and infection subsided before the diagnosis could be made or it was of unknown origin.

Usually, differential diagnosis of fever in dialysis patients can be cleared by history and clinical examination, simple studies of white cell count and urine, blood cultures, chest X-ray, abdominal ultrasound, or echocardiography. Patients should be given straightforward treatment with vancomycin 1 g/week if a staphylococcal infection is suspected, or a broad-spectrum β -lactam antibiotic if another infection is likely. If fever arises in hospital or if the patient is in a bad condition, an aminoglycoside should be added with therapeutic drug monitoring. Abscesses should be drained immediately and infected foreign bodies removed.

If fever continues after 4 days, the first diagnosis should be reconsidered. If one is perplexed by prolonged fever in a patient, it is best to reevaluate the patient's history and examination, review charts, consult another physician, and discuss the problem with colleagues.

If fever persists for more than 3 weeks, four treatable causes of 'fever of unknown origin' should be thoroughly excluded: (1) bacterial endocarditis; (2) intra-abdominal infections or abscesses; (3) tuberculosis, and (4) infections in bone or joints. Patients who are on regular dialysis treatment hardly ever present with factitious fever. Although there may be rare cases like brucellosis in dialysis patients there is usually no exotic disease but rather a masked, well-known cause of fever. Caring for a dialysis patient with prolonged fever of unknown origin requires more than ordering a battery of the newest screening methods. Every case of prolonged fever may be an enigma which remains a challenge to all the scientific and communicative skills of a good physician.

Table 1. Causes of fever

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