Human immunodeficiency virus and acute fulminant infection

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INTRODUCTION

The complications of human immunodeficiency virus (HIV) infection can result in life-threatening dysfunction requiring support in the intensive care unit (ICU). HIV is frequently overlooked as part of the differential diagnosis in those presenting with acute life-threatening infection. Consideration of the possibility of HIV infection and its related disorders, even in areas where HIV is thought uncommon, is increasingly important. Failure to do so may result in a fatal outcome or a more complicated course of illness, as well as inadvertently denying those patients that survive access to new treatments.

We report four patients who were admitted to the ICU at our hospital. None of these patients had a previous diagnosis of HIV, nor was HIV initially considered as being pertinent to their presentation. These cases illustrate the risk of overlooking HIV as a possible diagnosis.

CASE REPORT 1

A 27-year-old male, with no known risk factors for HIV infection, was admitted to hospital with an atypical pneumonia. Despite treatment with cefotaxime, erythromycin and rifampicin he continued to deteriorate. On the third day following admission he was transferred to the intensive care unit for respiratory support where an induced sputum was positive for *Pneumocystis carinii* pneumonia. Antimicrobial therapy was changed to high dose cotrimoxazole with rapid improvement in his clinical condition. A HIV antibody test subsequently performed was positive. The CD4 count was 17.

CASE REPORT 2

A 26-year-old female of African extraction presented to casualty profoundly septic. She had a 4-day history of severe pains in her legs, arms and chest before which she had been asymptomatic. On examination she was hypothermic, tachycardic and hypotensive with poor peripheral perfusion. A chronic ulcer on one buttock was noted. She was resuscitated and transferred to the intensive care unit where she deteriorated rapidly. In the intensive care unit, a progressively increasing boggy swelling of her right thigh, beneath the ulcer on the buttock, was noted. Blood cultures were positive for *Streptococcus* species and group B streptococcus was isolated from a swab of the ulcer. Despite aggressive debridement of the area she deteriorated and died. In view of the aggressive nature of the disease process, the possibility of immunocompromise was considered and a HIV antibody test performed was positive. The CD4 count at the time of admission to the intensive care unit was 10.

CASE REPORT 3

A 35-year-old man presented with a history of alternating diarrhoea and constipation. This had begun while on holiday in America 6 weeks previously, following a seafood meal. Despite treatment with ciprofloxacin, augmentin and metronidazole he continued to deteriorate and was transferred to the intensive care unit. The differential diagnosis at the time of admission included postinfective colitis and inflammatory bowel disease. No known risk factors for HIV were present. His condition failed to improve, and he underwent laparotomy where a diagnosis of tuberculous peritonitis was made, subsequently confirmed by culture of peritoneal fluid. In view of this diagnosis and because of risk factors elucidated at this time, a HIV antibody test was performed in the intensive care unit and found to be positive. The CD4 count was 9. After a prolonged illness he made a good recovery.

DISCUSSION

In all of the cases presented, the diagnosis of HIV infection was made subsequent to their ICU admission.

In the patient who was diagnosed with *Pneumocystis carinii* pneumonia (PCP), there had been significant delay in investigation and institution of specific treatment, as the possibility of HIV-related disease was not initially considered in the differential diagnosis. The delay in diagnosis and the consequent severity of the PCP could have been fatal, although the patient recovered. PCP leading to respiratory failure is one of the leading causes of ICU admission in patients with acquired immune deficiency syndrome (AIDS) (Casalino et al, 1998), but is not the most common cause of respiratory failure in the general population presenting in ICU. It should always raise the possibility of HIV infection if occurring in individuals not known previously to be HIV positive.

The incidence of bacterial infections in patient with AIDS is difficult to ascertain as such infections may be overshadowed by more dramatic opportunistic infections (Brettle, 1997). Awareness of a patient's HIV status in this situation may not influence treatment but should raise the possibility of atypical infections including tuberculous infection as

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found in case 3. While in this instance the tuberculosis was primarily an abdominal event the patient did have acid-fast bacilli (AFB) in his sputum and therefore was a potential risk to others both before and during admission. Furthermore, knowledge of the HIV status not only helped to explain the persistence of AFBs in the sputum despite appropriate chemotherapy but also allowed highly active antiretroviral therapy (HAART) to be commenced while the patient was recovering.

Fulminant cryptococcal sepsis is unusual and we could find no other reports in the literature of HIV presenting as cryptococcal septicaemia. The onset of cryptococcal disease is usually insidious and diagnosis may be delayed by the absence of specific symptoms and the waxing and waning nature of non-specific symptoms (Chuck and Sande, 1989), most commonly fever, headache and malaise. Our patient was being investigated for a non-specific skin rash at another centre which we believe may have been cutaneous cryptococcus. Had this patient's risk factors and the fact that he was being treated for cutaneous cryptococcus been known earlier, systemic antifungals could have been commenced at the time of admission.

These cases serve to highlight several issues. HIV-related disease may present in a fulminant form. Under these circumstances risk factors may either not be known or be hidden by the patient and the potential diagnosis of HIV-related illness is then likely to be overlooked. This may be especially true in institutions where HIV disease is rarely seen, but even in large centres, different physicians may have a varied knowledge of possible presentations related to HIV.

HIV leading to AIDS has often been considered a terminal illness. However, the advent of HAART has resulted in dramatic improvements in the immunological function of patients and the complexion of the disease has changed. We have seen an excellent response in patients surviving their admission to ICU who are commenced on HAART.

Most of the patients described here had very low lymphocyte counts. HIV leads to a fall in the CD4 lymphocyte subset count with a resulting fall in total lymphocyte count. It is important to be aware that this can also occur as a direct consequence of fulminant infection irrespective of HIV. Therefore while the lymphocyte count can serve as a useful guide to the possibility of HIV infection and may lead trainees to test for HIV, its use as a definitive surrogate marker for HIV infection is less valuable. Another problem arising is that these patients may be ventilated and therefore unable to give consent for testing. It is our view that in such cases HIV testing should be done, preferably with the consent of relatives or the legal guardian (in the context of family circumstances) only if it influences the management.

CASE REPORT 4

A 37-year-old male presented to casualty in a state of profound cardiovascular collapse and with a disseminated intravascular coagulopathy. He had a 6-hour history of abdominal pain and nausea, but he had complained of lethargy and malaise, associated with weight loss, over the previous 6 weeks. A diagnosis of systemic sepsis of unknown origin was made and he was commenced on broad spectrum antibiotics. He deteriorated and died 3 hours after admission despite aggressive resuscitative support. Shortly after admission to intensive care unit risk factors for HIV became known and in view of the severity of the illness and the lack of an obvious diagnosis a HIV antibody test was performed and found to be positive. Results of blood cultures received from the postmortem revealed a heavy growth of *Cryptococcus neoformans*.

CONCLUSIONS

As with any fulminant disease, early diagnosis followed by swift specific treatment is fundamental to effective, and hopefully successful, treatment. Delay or misdiagnosis are potentially disastrous. Risk factors may not be apparent. If HIV-related illness is not perceived to have an acute or fulminant presentation it will not have a high priority in the differential diagnosis of patients presenting with fulminant infection. This may be particularly true in areas where HIV disease is perceived to be uncommon. It is clear from these cases that HIV-related illness must be part of the differential diagnosis in patients presenting with fulminant infective illness. HM

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