Central Nervous System Disease in Renal Transplant Recipients

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Dear Sir,

Diseases of the central nervous system (CNS) are an important cause of morbidity and mortality in renal transplant recipients [1]. Since there are few reports reviewing these lesions, we describe here the CNS complications that occurred in 38 of the 550 patients who received live-donor renal allografts at our centre during a 15-year period. The findings and methods of diagnosis are summarised in table I.

As expected from other reports [1–3], infections were the commonest CNS complications, being seen in cases 1–16. However, tuberculous meningitis was much more frequent reflecting the higher prevalence of tuberculosis in the tropics. Case 4 who died of gram-negative bacillary septicaemia had microglial nodules in the pons; such lesions have been reported previously and are believed to be due to cytomegalovirus or herpes simplex virus infection [3, 4]. Cryptococcus was the fungus most frequently involving the CNS, though it is uncommon among all systemic fungal infections in such patients here [5].

Cerebrovascular accidents occurred in cases 17–25 including 8 of the 283 renal transplant recipients treated using a high-dose steroid schedule employed earlier and in only 1 of the 267 cases who were given steroids according to the newer low-dose regimen. This difference was statistically significant by Fisher's exact test ($p < 0.02$). All these patients had hypertension and 2 had diabetes mellitus as well.

Eight patients presented with convulsive disorders, of whom 4 had hypertensive encephalopathy and 2 idiopathic epilepsy. Patients 30 and 31 had generalised convulsions with serum calcium levels of 0.95 and 1.05 mmol/L, respectively. Detailed investigations failed to reveal any cause for hypocalcaemia, but both patients improved with calcium supplements.

All 3 patients with hepatic encephalopathy had HBs antigenaemia. Case 37 developed drowsiness 5 months after transplantation, at which time renal functions were only mildly impaired and other investigations including cerebrospinal fluid examination were normal. A CAT scan and EEG showed evidence of bilateral frontal lobe atrophy of unknown cause. Extensive investigations including a diagnostic laparotomy failed to show the cause of fever in case 38, but necropsy revealed pulmonary nocardiosis and central pontine myelinolysis.

with neuro-axonal dystrophy. This latter condition has been described in renal transplant recipients earlier [6]. It is of unknown aetiology; but alcoholism, vascular abnormalities, CNS infections, cachexia and malnutrition have been associated with this lesion [7, 8]. None of the patients had neoplasia, which is an important complication following transplantation [9,10]. All except cases 5, 7, 10, 14, 16 and 24–33 died of the CNS diseases described above.

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Table I. CNS disease in 38 renal transplant recipients

Case No.
Age years
Sex
Months after transplant
Clinical presentation
Diagnosis (and method of diagnosis)
1
26
M
2
fever, coma
viral encephalitis (CSF)
2
30
M
16
fever, coma
viral encephalitis (CSF)
3
34

M
46
fever, skin rash
haemorrhagic varicella with intracranial haemorrhage (clinical)
4
30
M
1
fever
microglial nodules in the pons (necropsy)
5
28
M
3
fever, headache
tuberculous meningitis (CSF microbiology)
6
24
F
4
fever, headache
tuberculous meningitis (CSF microbiology)
7
41
M
48
fever, headache
tuberculous meningitis (CFS microbiology)
8
40
M
20
tremors, diplopia
tuberculous meningitis with extensive infarction (necropsy)
9
38
M
16
fever, headache
cryptococcal meningitis (CSF microbiology)
10
45
M
108
fever, headache
cryptococcal meningitis (CSF microbiology)

11

34

M

16

fever, headache

cryptococcal cerebral abscesses (CAT scan, pus culture)

12

20

M

4

fever, convulsions

basal meningitis and encephalitis due to Mucor and Aspergillus (necropsy)

13

23

M

2

convulsions

aspergillosis of cerebrum and cerebellum with infarction (necropsy)

14

26

M

2

fever, headache

Klebsiella meningitis (CSF microbiology)

15

43

M

5

fever, convulsions

staphylococcal cerebral abscesses (necropsy)

16

42

M

16

fever, convulsions

multiple cerebral abscesses (CAT scan)

17

30

F

2

headache

intracerebral haemorrhage and infarction (necropsy)

18

45

M

1

coma

intracerebral haemorrhage (necropsy)

19

28

M

1

coma, headache

subarachnoid and intracerebral haemorrhage (necropsy)

20

44

M

5

fever, coma

subdural and subarachnoid haemorrhage (necropsy)

21

23

M

19

vomiting, coma

subarachnoid and intracerebral haemorrhage (necropsy)

22

30

M

1

fever, coma

ischaemic laminar cortical necrosis, frontal lobe with myocardial infarction (necropsy)

23

34

M

36

hemiparesis

cerebral thrombosis (clinical)

24

48

M

48

hemiparesis

cerebral thrombosis (clinical)

25

50

M

64

hemiparesis

cerebral thrombosis (clinical)

26

12

M
1
convulsions
hypertensive encephalopathy (clinical)
27
10
M
1
convulsions
hypertensive encephalopathy (clinical)
28
8
M
2
convulsions
hypertensive encephalopathy (clinical)
29
30
M
4
convulsions
hypertensive encephalopathy (clinical)
30
35
M
132
convulsions
hypocalcemia (clinical)
31
45
F
1
convulsions
hypocalcemia (clinical)
32
14
M
3
convulsions
idiopathic epilepsy (EEG, CAT scan)
33
24
F
3
convulsions
idiopathic epilepsy (EEG, CAT scan)

34

35

M

7

jaundice, coma

hepatic encephalopathy (clinical)

35

32

M

8

jaundice, coma

hepatic encephalopathy (clinical)

36

32

M

60

jaundice, coma

hepatic encephalopathy (clinical)

37

47

M

5

coma

bilateral frontal lobe atrophy (CAT scan)

38

32

M

7

fever, coma

central pontine myelinolysis (necropsy)

9 Schneck, S.A.; Penn, I.: De-novo brain tumours in renal-transplant recipients. *Lancet* i: 983–986 (1971).

10 Penn, I.; Starzl, T.E.: Malignant tumours arising de-novo in