Neurocysticercosis in a non-endemic region: A large case series from New York City

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Background

Neurocysticercosis (NCC) is a parasitic infection of the nervous system, endemic among low-income countries. In the US, NCC is a neglected infection, affecting mainly the immigrant population. Neurologic complications could be avoided with early diagnosis and treatment.

Objective

To describe and compare the demographics and clinical characteristics of patients with NCC according to the location of the parasite

Methods

Demographic, clinical, and serology data were retrieved from the medical records of patients with NCC between 03/01/1993 and 03/01/2020.

Results

Of the 260 patients, 94.2% were immigrants from 22 countries; Mexico (28.8%) and Ecuador (24.2%) were the most common.

The most frequent location in the CNS was parenchymal disease (53.5%), which commonly presented as seizures (74.2%).

Patients with subarachnoid disease (SANCC) had longer time from immigration to presentation than viable parenchymal disease (p=0.003), frequently presented as headache (70%) and intracranial hypertension (ICH) (37.5%). Of the patients with ICH, 80% required shunt placement. Interestingly, 20% presented as vascular events. Concomitant spinal disease was diagnosed in 24.7% of patients with SANCC.

As expected, a positive western blot was more frequent in extraparenchymal NCC (p<0.001). Serum cysticercosis antigen was positive in 38 patients; all but one had extra-parenchymal NCC.

Table 1. Characteristics of the patients with neurocysticercosis

	n = 260
SOCIODEMOGRAPHICS	
Sex, male (n, %)	163 (62.7)
Age	36.7 ± 13.7
Migrant (n,%)	245 (94.2)
Country of origin (n,%)	
Mexico	75 (28.8)
South America	73 (28.1)
Central America	61 (23.5)
Caribbean	22 (8.5)
Europe and Asia	19 (7.3)
North America	10 (3.8)
TYPE OF DISEASE	
Parenchymal only	139 (53.5)
Intraventricular only	19 (7.3)
Subarachnoid only	40 (15.4)
Parenchymal and intraventricular	13 (5.0)
Parenchymal and subarachnoid	36 (13.8)
Subarachnoid and intraventricular	5 (1.9)
Parenchymal, subarachnoid and intraventricular	8 (3.1)

Conclusion

Our study is one of the largest series of NCC in the US and highlights the clinical presentations of the different forms of NCC. SANCC may be diagnosed many years after migration and frequently presents as intracranial hypertension. Ischemic events due to SANCC were common in our series. Screening imaging of the spine in SANCC is important to diagnosis concomitant spinal disease. The recombinant antigen was more likely to be positive in SANCC than in parenchymal disease. ID physicians should be aware of the heterogeneous presentation of NCC.

References

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Table 2. Clinical and demographic characteristics according to the location of the parasite

	Parenchymal NCC n=139		Subarachnoid NCC	Intraventricular NCC	Extrapar. and par. NCC
	Viable n=31	Not viable n=108	n=40	n=19	n=62
DEMOGRAPHICS					
Age at diagnosis	32 [22-39]	33.5 [25-44]	42[32-51.5]	35[25-37]	35.5 [30-44]
Number of years since migration	5.5 [1.5-11]	10 [4-16]	13[5-20]	7[3-14]	11 [4-17]
CLINICAL PRESENTATION					
Headache	9 (29.0)	41 (37.9)	28 (70.0)	13 (68.4)	32 (51.6)
Seizure	23 (74.2)	71 (65.7)	8 (20.0)	3 (15.8)	22 (35.5)
Intracranial hypertension	2 (6.5)	0	15 (37.5)	12 (63.2)	19 (30.6)
Stroke or transient ischemic event	2 (6.5)	7 (6.5)	8 (20.0)	1 (5.3)	28 (45.2)
DIAGNOSIS/LABORATORY					
Positive western Blot	23 (74.2)	42 (38.9)	35 (87.5)	18 (94.7)	57 (91.9)
Positive serum cysticercosis ag.	1 (1.25)	0	7 (25.0)	0	30 (39.6)