# PROGNOSIS OF THE EPILEPSY DUE TO NCC from the population based study in Salama, Honduras

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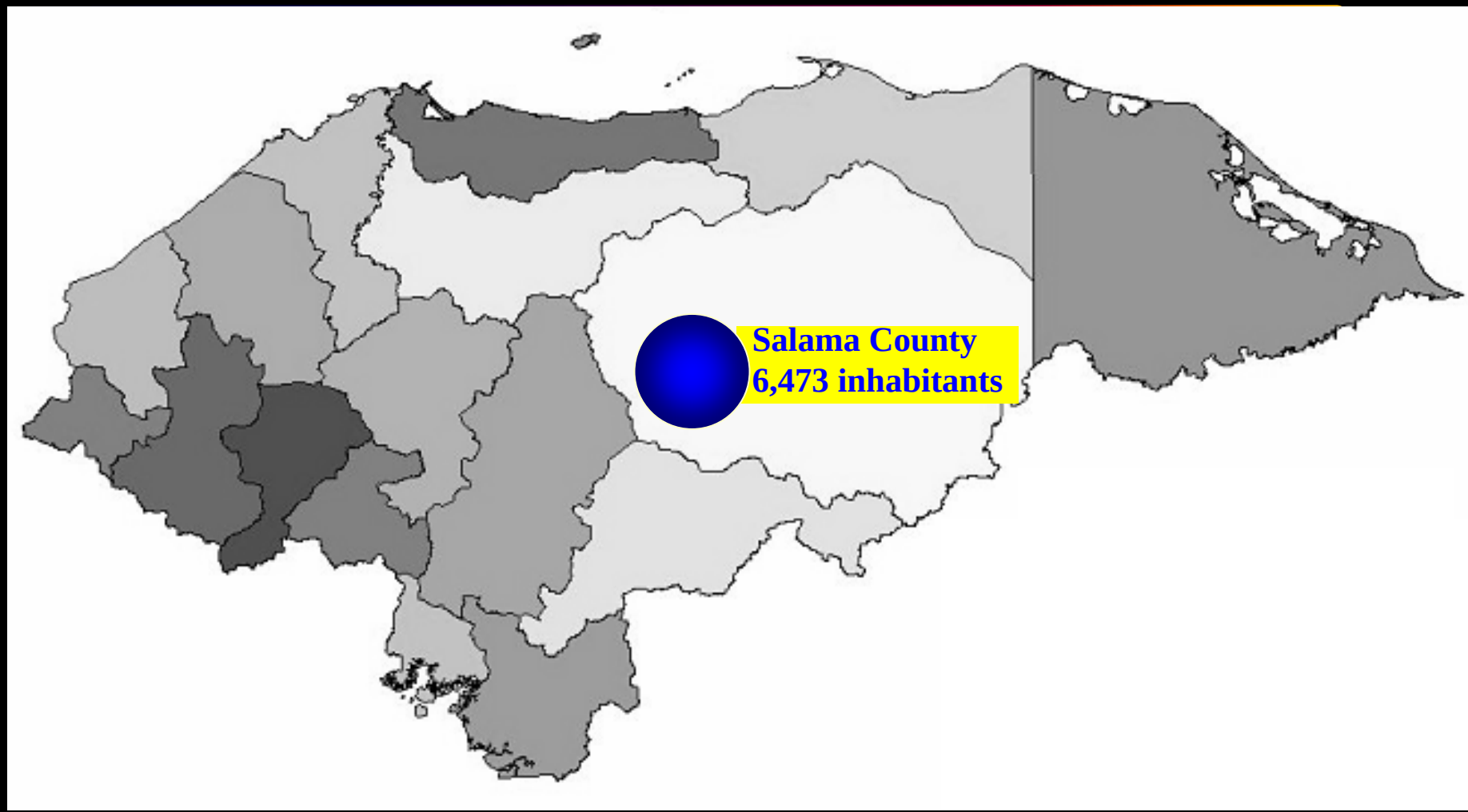
# *PURPOSE*

To determine long-term prognosis of epilepsy due to neurocysticercosis (NCC) in 33 patients diagnosed in 1997 during a population-based study in the Salamá County in Honduras (6,473 inhabitants).

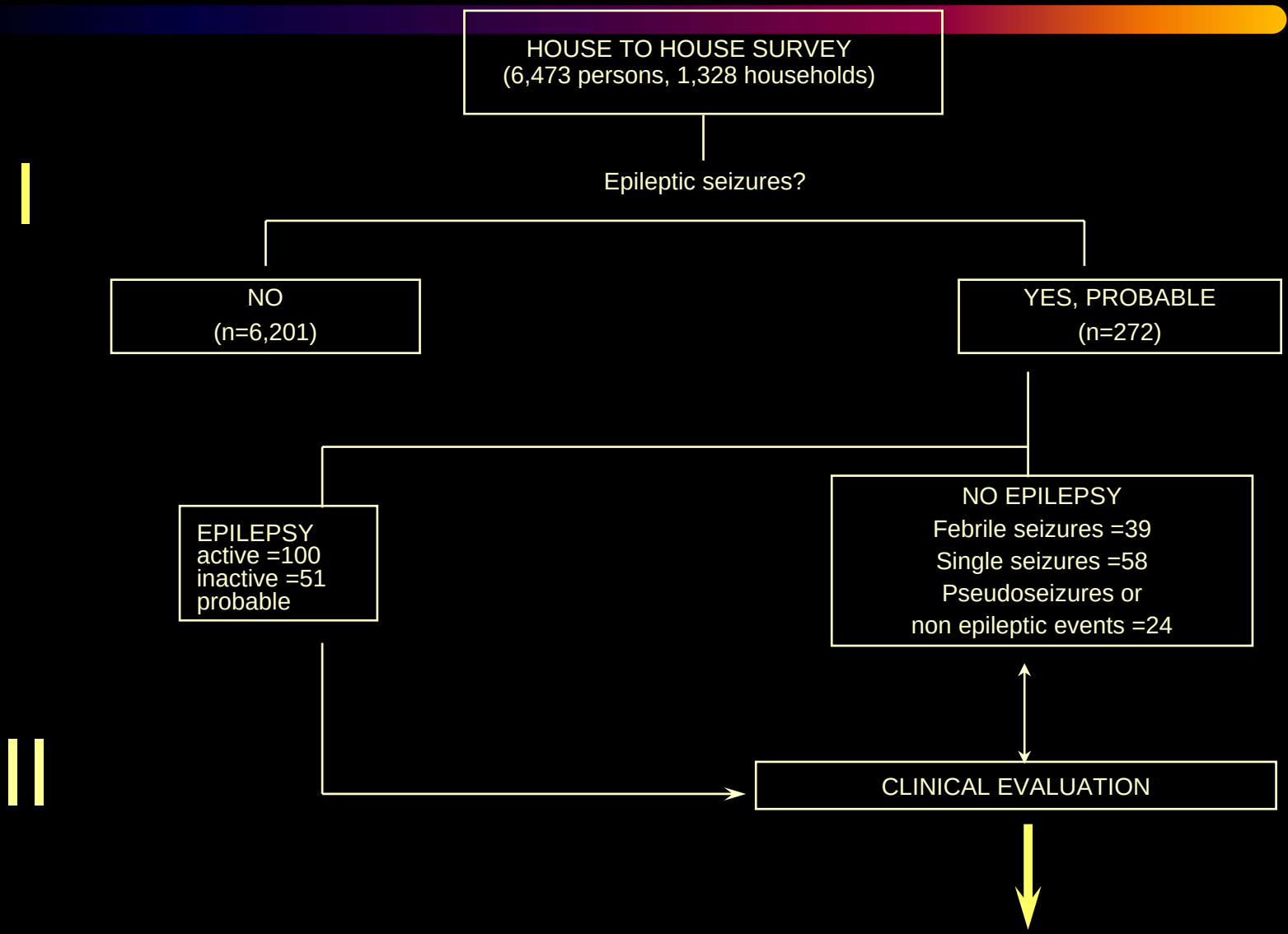

Salama County
6,473 inhabitants

# *METHODS*

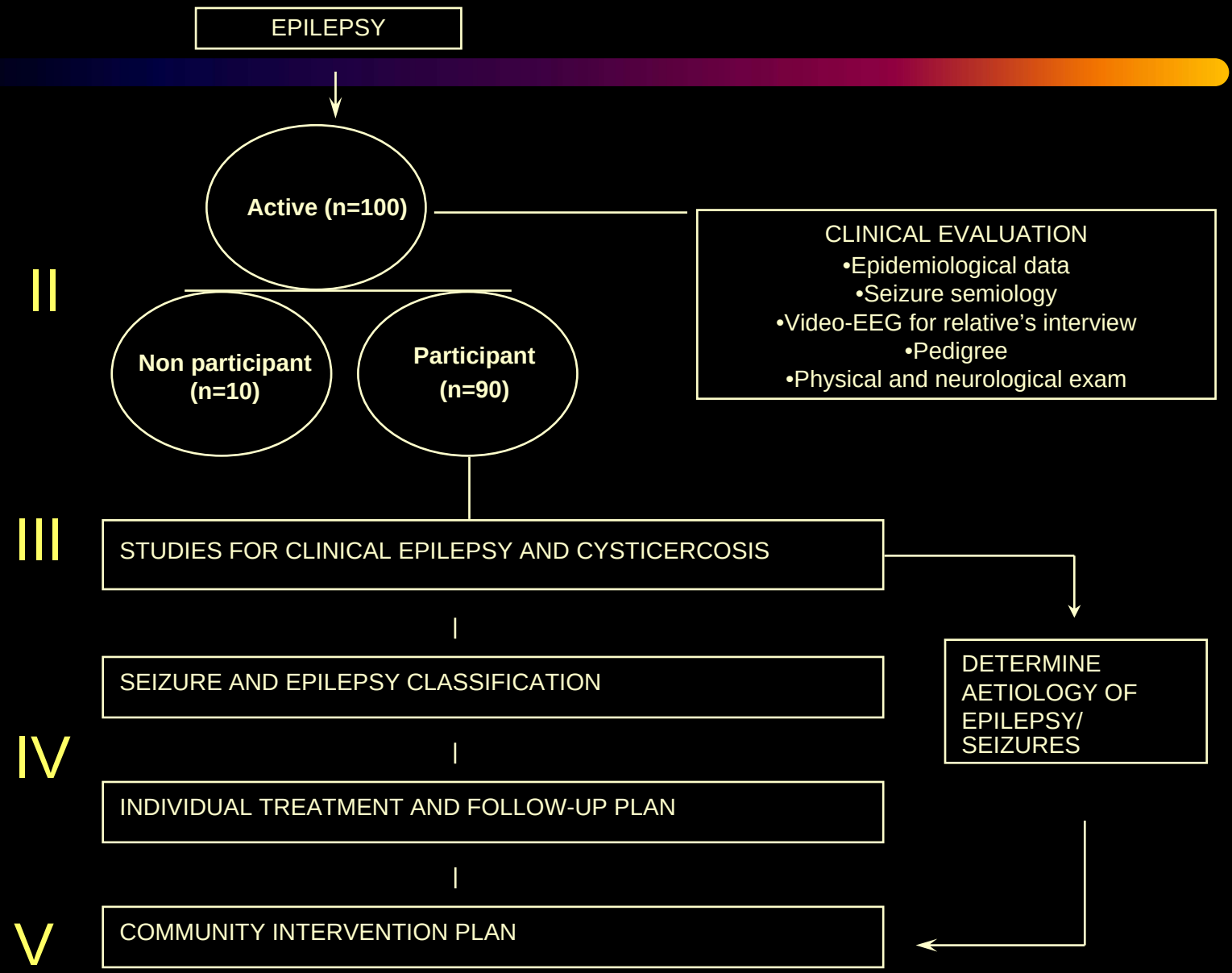
All patients had initially undergone clinical evaluation, video–EEG, brain tomography and serum electroimmunotransfer blot for cysticercosis, after informed consent

(Medina et al, Epilepsia 1997;38 (suppl. 7):8).

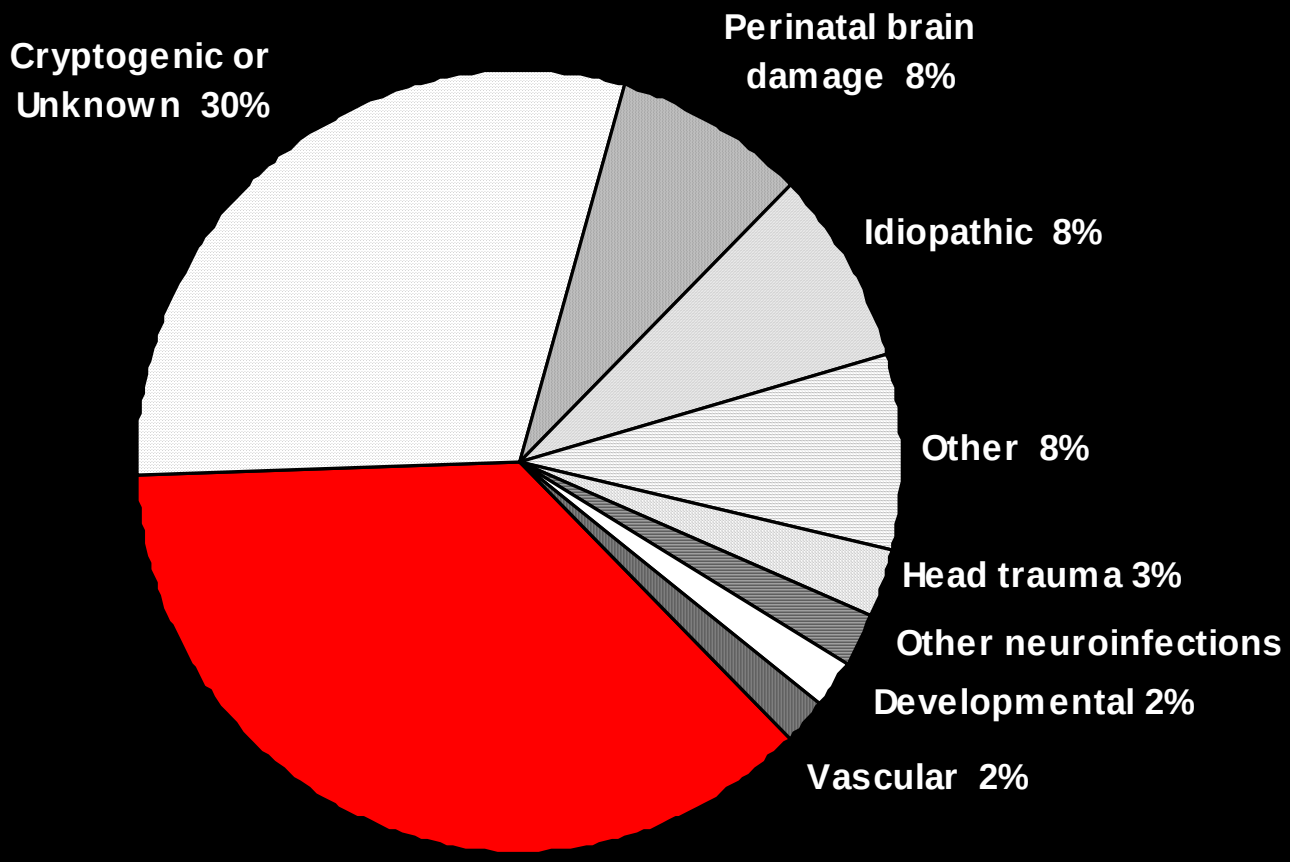
# THE SALAMA EPILEPSY STUDY METHODOLOGY BY PHASES



# THE SALAMA EPILEPSY STUDY, METHODOLOGY BY PHASES



# *Etiology of epilepsy in Salama (n=90)*



# Patients

23 F 10 M

X= 25.4 y/o

(6-67 y/o)

| no. | Sex | Age | Onset | Headache | Family Hx Sz | Personal taeniosis | Household taeniosis | Abnormal neurol exam |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| 1 | F | 29 | 34 | | X | | | X |
| 2 | M | 34 | 27 | | X | | x | |
| 3 | F | 12 | 7 | | | | | X |
| 4 | M | 22 | 20 | X | | | x | X |
| 5 | F | 8 | 5 | | x | | | |
| 6 | F | 16 | 12 | x | x | | | |
| 7 | M | 10 | 9 | x | x | | | x |
| 8 | F | 48 | 28 | x | | x | | x |
| 9 | M | 18 | 17 | x | | | | x |
| 10 | F | 41 | 13 | | | | x | x |
| 11 | F | 8 | 5 | X | X | | | |
| 12 | F | 15 | 7 | | | | | |
| 13 | F | 41 | 12 | | | | | |
| 14 | M | 11 | 7 | | x | | x | |
| 15 | M | 22 | 2 | | x | | | x |
| 16 | M | 13 | 12 | | x | | x | x |
| 17 | F | 50 | 32 | | | | x | |
| 18 | F | 43 | 10 | | x | | x | x |
| 19 | F | 46 | 15 | | x | | x | x |
| 20 | M | 6 | 4 | | x | | x | |
| 21 | F | 14 | 9 | | x | | x | |
| 22 | F | 12 | 6 | | | | x | x |
| 23 | F | 23 | 11 | | x | | x | x |
| 24 | F | 15 | 9 | | x | | x | |
| 25 | F | 25 | 11 | | x | | x | x |
| 26 | F | 67 | 30 | | x | x | | |
| 27 | F | 15 | 7 | | x | | | x |
| 28 | M | 8 | 6 | x | | x | | |
| 29 | M | 32 | 21 | | x | | x | |
| 30 | F | 23 | 19 | x | x | x | | |
| 31 | F | 48 | 28 | | x | | x | |
| 32 | F | 12 | 3 | | x | | | |
| 33 | F | 35 | 3 | | x | | x | x |

# Diagnostic criteria and degrees of certainty for neurocysticercosis in patients from endemic countries[a]

**Absolute criteria for definitive NCC diagnosis** [b]

1. Histological demonstration of the cysticercus from biopsy of brain lesion
2. Evidence of pathognomonic active lesions showing the scolex on CT or MR
3. **Demonstration of specific antibodies and/or antigens in CSF**

**Major criteria for considering probable NCC diagnosis**

1. **Suggestive lesions on neuroimaging studies (CT or MR)** [c]
2. Disappearance of intracranial lesions after treatment with anticysticercal drugs.[d]

**Minor criteria for considering probable NCC diagnosis**

1. Clinical manifestations compatible with NCC[e]
2. **Calcifications in plain X-ray films.**

**Epidemiological criteria to support probable NCC diagnosis**

1. **Personal or household evidence of past or present T. solium teniasis**
2. **Serum antibodies determined by EITB**

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[a] Modified from Del Brutt et al (ref)

[b] Any absolute criterion ca be used alone to reach the diagnosis

[c] Annular, ring-enhancing, calcifications, arachnoiditis, vasculitis, etc.

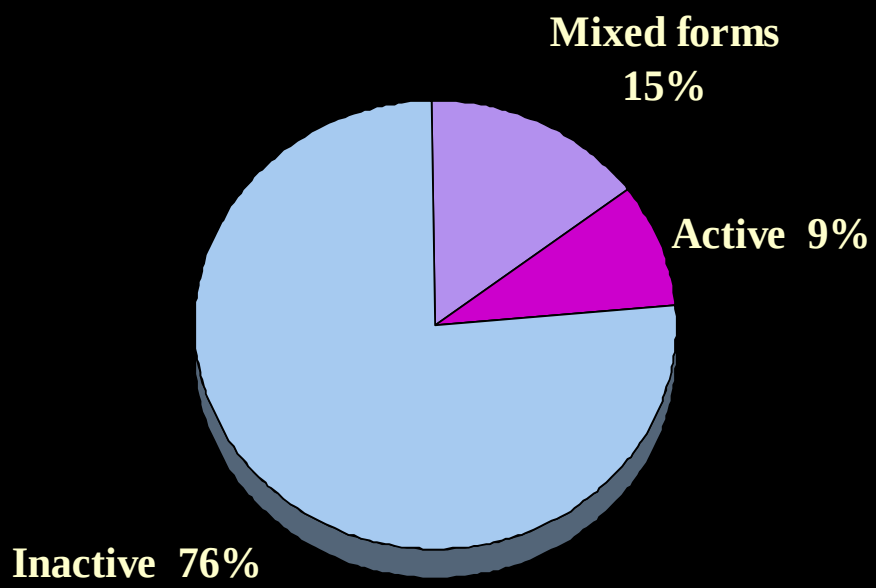
[d] Albendazole or Praziquantel (this criterion could become absolute if supported by epidemiological history and clinical follow-up

[e] Epilepsy, especially late-onset epileppsy, headache, etc.

# *33 patients with epilepsy due to NCC*

**The Salama Epilepsy Study**

**SOTELO'S CLASSIFICATION OF NCC BY CT SCAN**

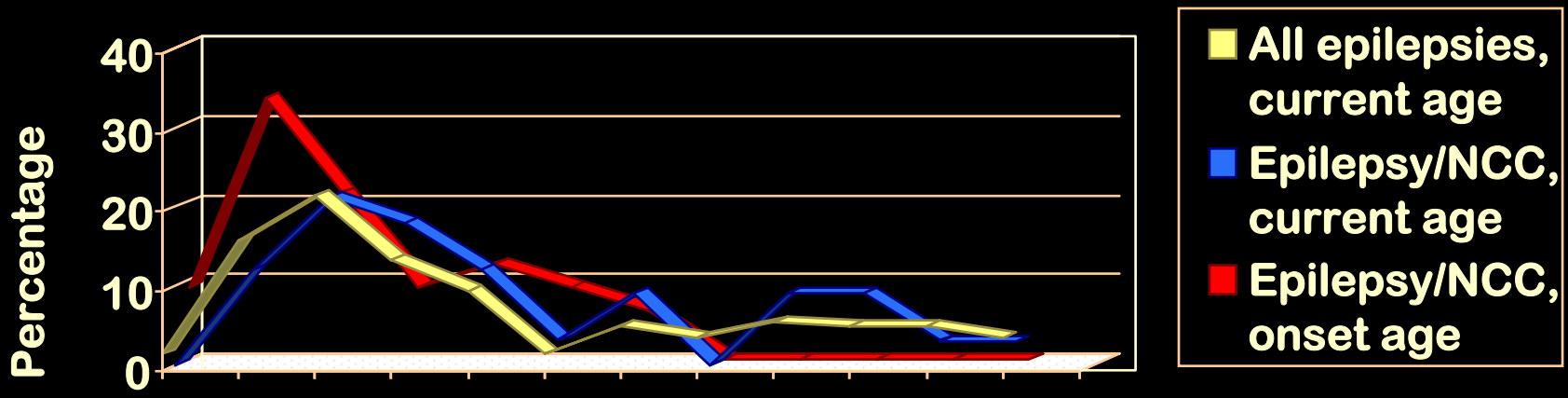



Mean number of lesions = 10 per patient

Range 1-100 for patient (n=335)

The Salama Epilepsy Study

# EPILEPSY DUE TO NCC BY AGE

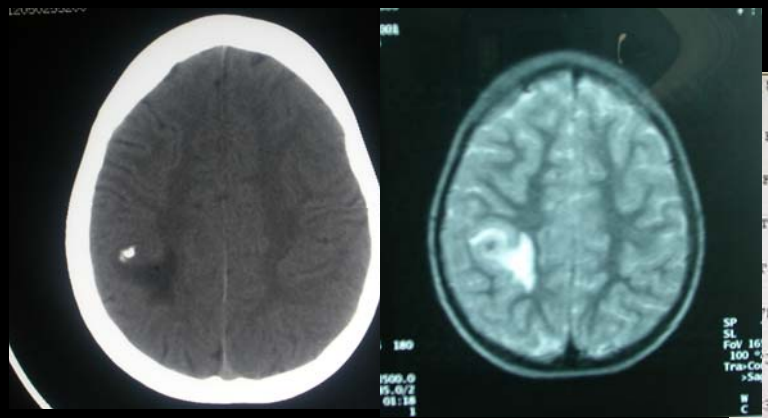


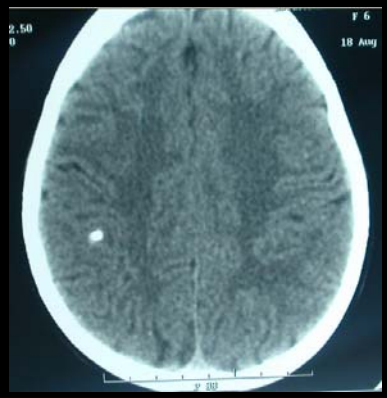

Most epilepsies (56.8%) beginning before age 15 are due to NCC

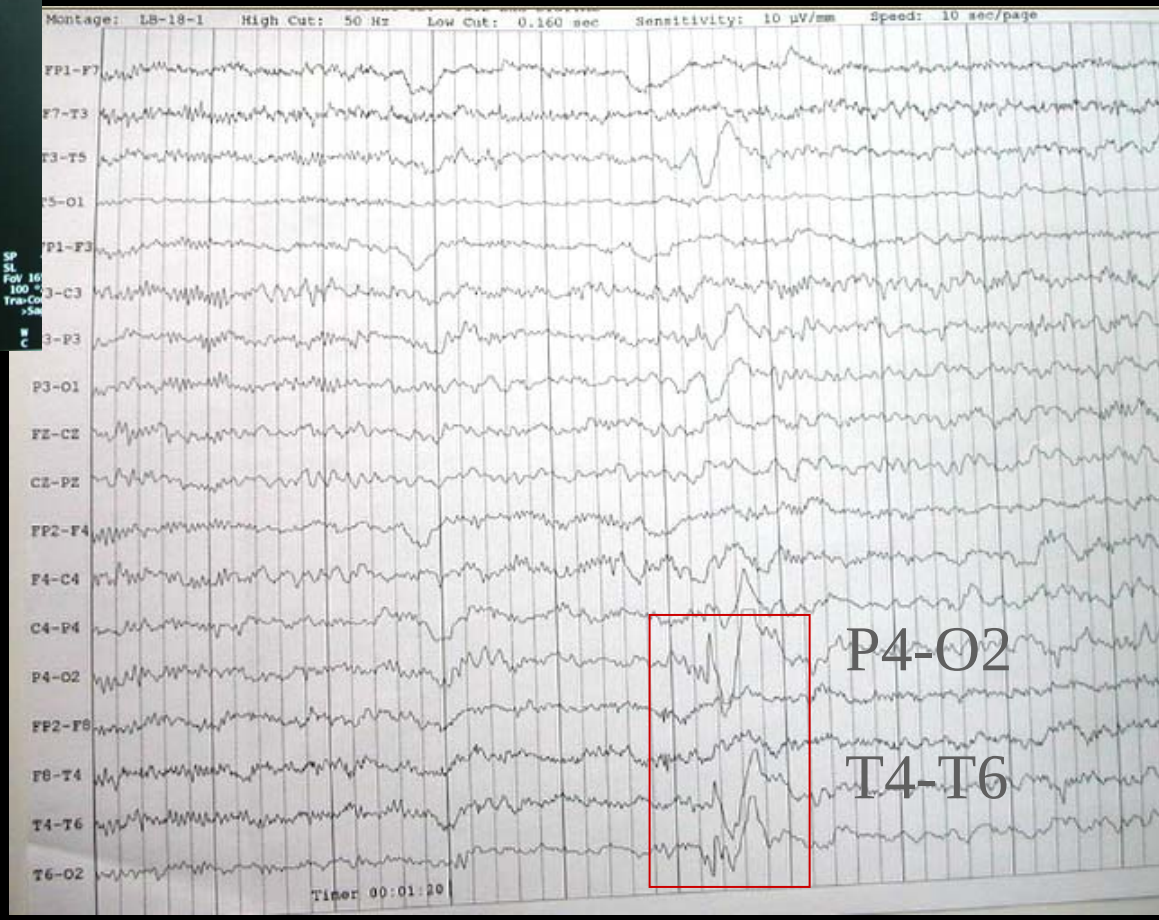
*Right parietal calcified NCC with right parieto-temporal epileptic activity.*

*Female patient (EITB)*

*+ with partial seizures in left side of her body.*







Salamá Study

# Epilepsy due to NCC

- **Symptomatic partial epilepsies**

| Lobe | R | L | Bilateral | Total | % |
|---|---|---|---|---|---|
| **Frontal** | **8** | **9** | **2** | **19** | **58** |
| Temporal | 1 | 1 | - | 2 | 6 |
| Parietal | 1 | 4 | - | 5 | 15 |
| Occipital | 1 | 2 | - | 3 | 9 |
| Fronto-temp. | 3 | - | 1 | 4 | 12 |
| | 13 | 16 | 3 | 33 | 100 |

# *METHODS*

- At least one annual follow-up appointment was done.

- Parameters evaluated were:
- Seizure frequency
- Treatment compliance
- Knowledge of the disease
- Mortality
- Persistence or remittance of epilepsy after 5 years

(ILAE Commission 1993)

# *RESULTS*

By the five-year follow-up in February 2003

- 25/33 patients remained in the community (76%),
- 6 had emigrated (18%)
- 2 had died (6%).

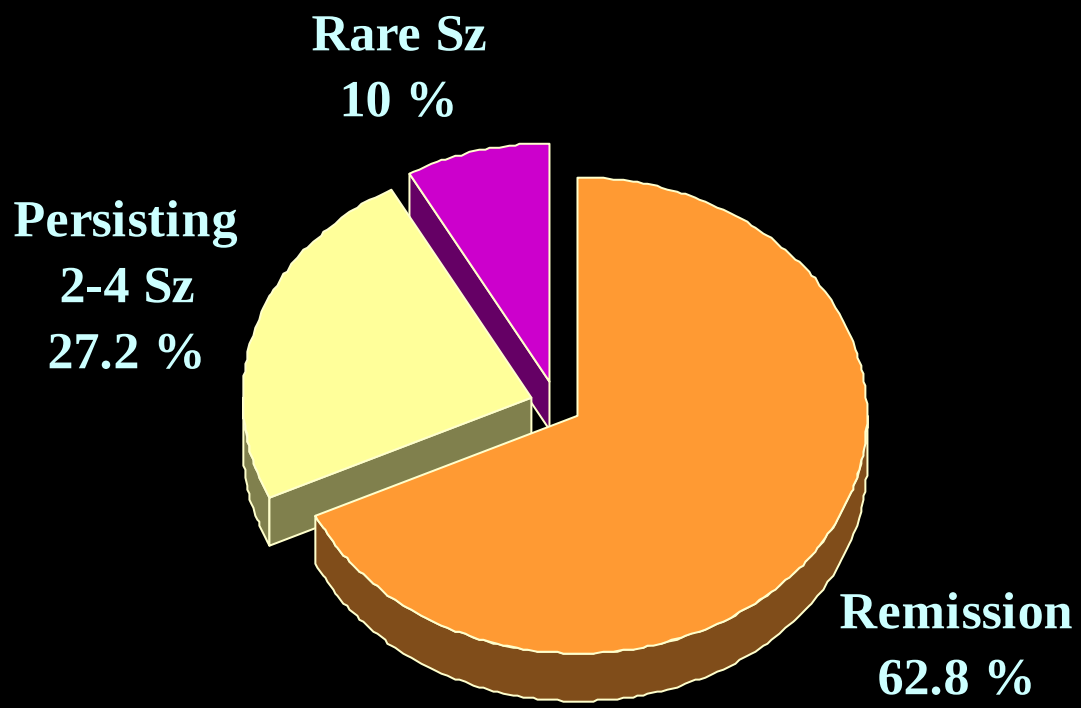
# *RESULTS*

•Out of the 25 patients:

•62.8% reported remission
•27.2% persisted with at least 2-4 partial with/without secondary generalized seizures per year.  10% had rare seizures.

•Most of these seizures (76%) originated from fronto temporal lesions, two thirds of which were calcified.

*Prospective study on the prognosis of the epilepsy due to NCC*
*SALAMA STUDY, 2003*
*n=25 in 2003 / 33 in 1997*

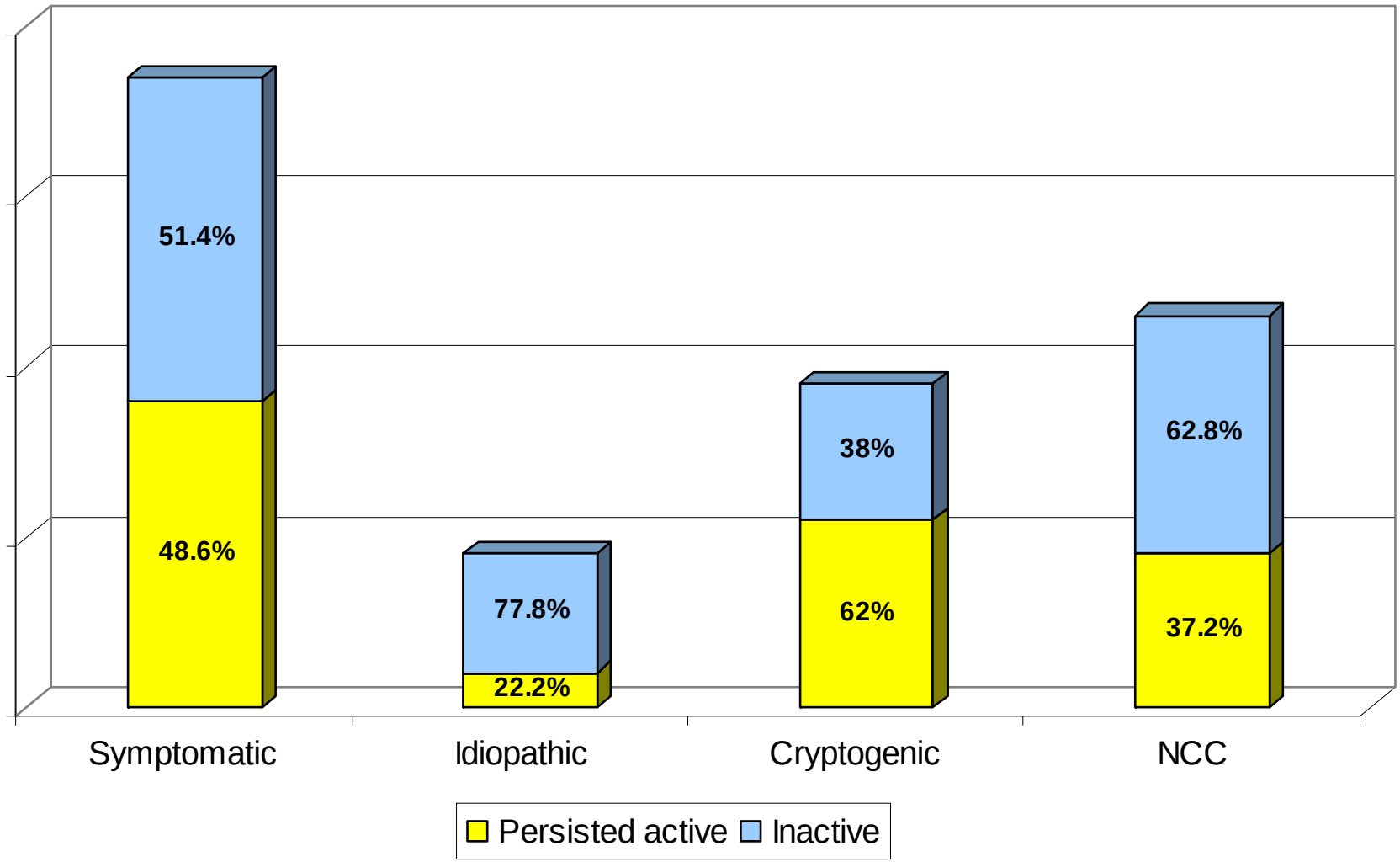


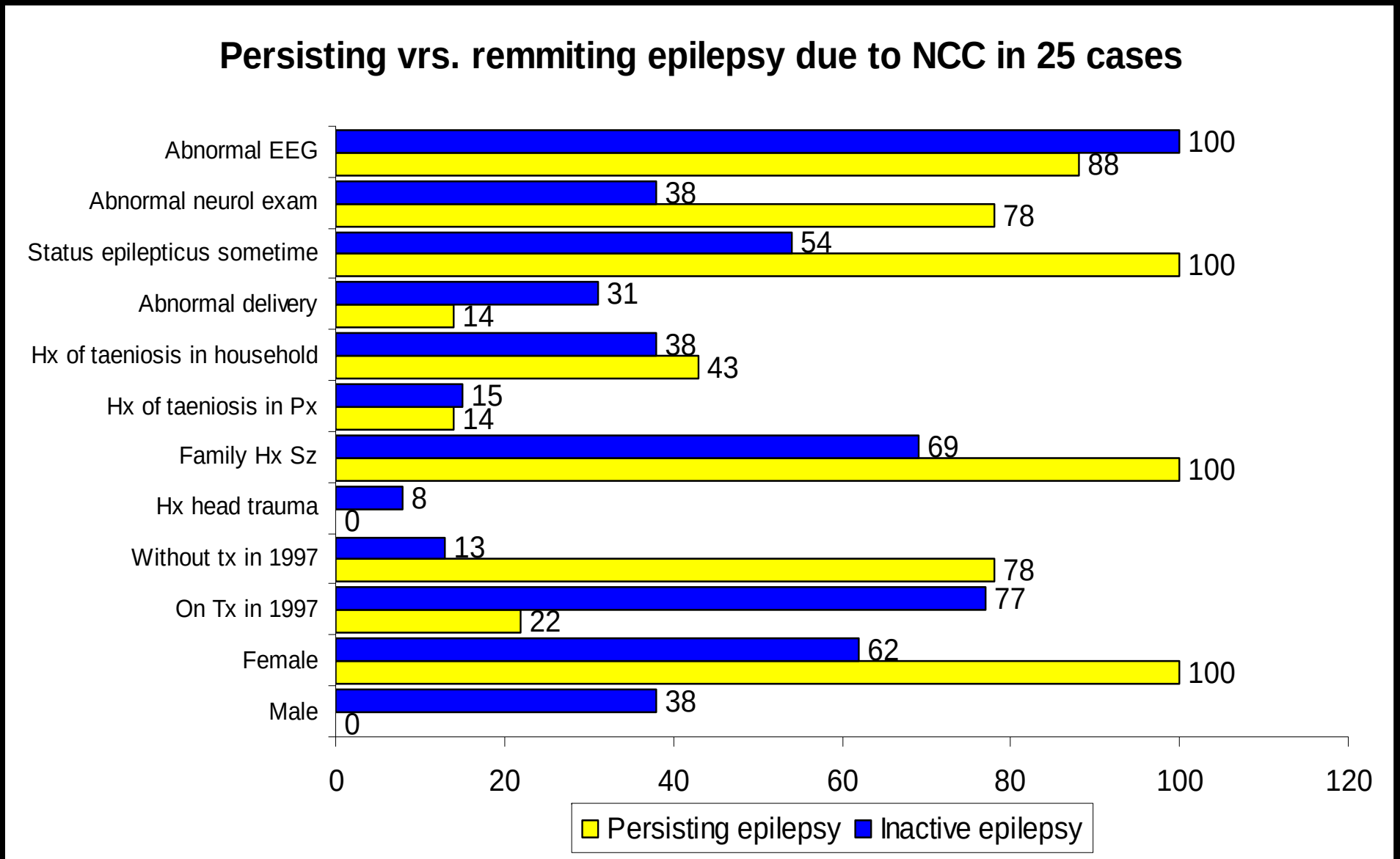

- 32% are taking AED treatment

# *RESULTS*

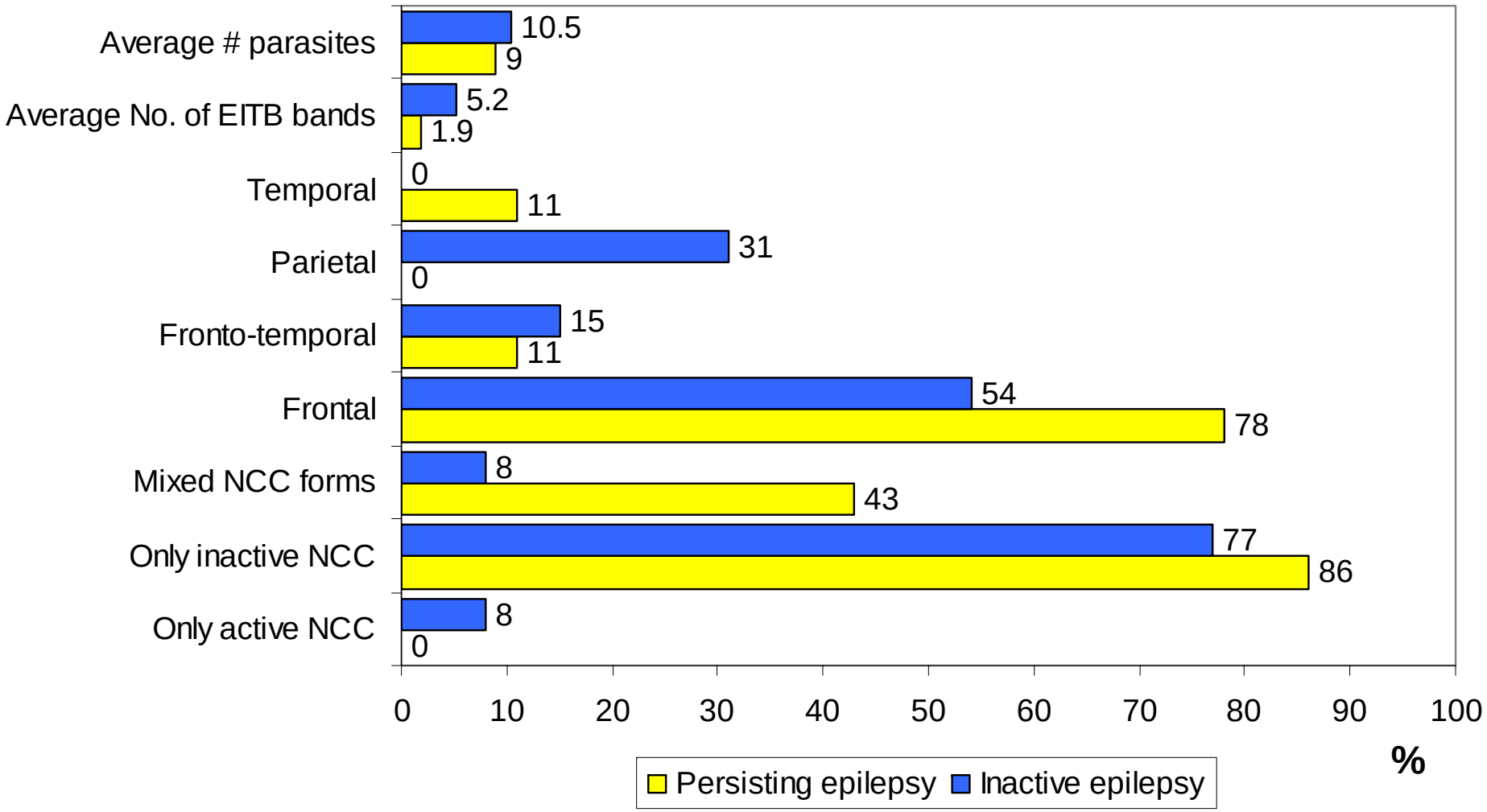
- We identified compliance problems on the treatment due to lack of access to the first generation and 2nd generation AED.

## Prognosis in 65/90 patients with 5 years follow-up (in%)




Persisting vrs. remmiting epilepsy due to NCC in 25 cases
Abnormal EEG
Abnormal neurol exam
Status epilepticus sometime
Abnormal delivery
Hx of taeniosis in household
Hx of taeniosis in Px
Family Hx Sz
Hx head trauma
Without tx in 1997
On Tx in 1997
Female
Male
100
88
38
78
54
100
31
14
38
43
15
14
69
100
8
0
13
78
77
22
62
100
38
0
0
20
40
60
80
100
120
Persisting epilepsy
Inactive epilepsy

## Persisting vrs. remmiting epilepsy due to NCC in 25 cases



# *General characteristics in persisting epilepsy due to NCC (N=9/25)*

- Female
- Family history of seizures
- Status epilepticus
- Abnormal neurological exam
- Absence or non-compliance in AED treatment
- Frontal localization
- Inactive lesions

# *Influencing factors in the prognosis?*

- Average number of parasites
- Localization of the brain lesion
- Genetic
- Treatment

# *CONCLUSIONS*

•According to this study, prognosis of epilepsy due to NCC is variable, ranging from a good outcome with remission in most cases but with persistence of epilepsy in one third of the patients.

•Localization of lesions and the lack of adequate AED seem to play an important role.

# *Copan, Honduras*