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Semiology of Late Epileptic Seizures in Algeria

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Abstract:
Background*: Epilepsies are the most common chronic disabling neurological conditions. Late-onset epilepsies are always suspicious and often pose the problem of their etiology. It is an epileptic disease whose first epileptic seizure begins from the age of 25 years. Epileptic seizures have variable clinical expressions depending on their partial or generalized type. The objective of our study was to determine the semiology of late seizures in the Algerian population.*
Materials and Methods*: The study population includes all Algerian patients whose age of onset of the first seizure is 25 years or more, recruited during the period from January 2008 to December 2016 at ALI AIT IDIR Hospital in Algiers.*
Results: *Among 336 patients with late epilepsy seen between 2008 and 2016. Partial seizures represent 70.8% of seizures (238 patients) including 26.5% (89 cases) complex partial secondarily generalized, 20.2% (68 cases) complex partial, 16.1% (54 cases) simple partial, 8% (27 cases) simple partial secondarily generalized. Generalized tonic-clonic seizures represent 25.6% of seizures (86 patients). Status epilepticus represent 3.6% of seizures (12 patients) including 2.4% (8 cases) nonconvulsive status epilepticus and 1.2% (4 cases) convulsive status epilepticus.*
Conclusion: *Partial seizures were the most common in 70.8% of cases: simple partial 16.1%, complex partial 20.2%, simple partial secondarily generalized 8% and complex partial secondarily generalized 26.5%. They were generalized in 25.6%. Status epilepticus represent 3.6% of seizures, including 2.4% nonconvulsive status epilepticus and 1.2% convulsive status epilepticus. Complex partial secondarily generalized seizures were the most represented, about 26.5% of cases. The distribution by age group shows a decrease with age, more pronounced for partial seizures.*
Key Words*: Late epilepsy, Partial seizures, Simple partial seizure, Complex partial seizure, Simple partial secondarily generalized seizure, Complex partial secondarily generalized seizure, Generalized seizure, Generalized Tonic-clonic seizure, Status epilepticus, Convulsive status epilepticus, Nonconvulsive status epilepticus.*

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I. Introduction

Epilepsies are the most common chronic disabling neurological conditions. Late-onset epilepsies are always suspicious and often pose the problem of their etiology. It is an epileptic disease whose first epileptic seizure begins from the age of 25 years.

Epileptic seizures have variable clinical expressions depending on their partial or generalized type (generalized tonic-clonic seizure, seizure characterized by an isolated deja-vu deja-vécu). This diversity can lead to a diagnostic wander of several months or years before epilepsy is suggested. This is the case of pauci-symptomatic forms, in particular without disturbance of consciousness, and forms associated with behavioral disorders mistakenly taken for manifestations of psychiatric origin.

In the elderly, seizures take on particularly equivocal expressions: confusional syndrome, atypical memory disorders, paroxysmal nocturnal behavioral disorders, transient aphasia, etc., which can mimic transient ischemic manifestations, a beginning dementia syndrome and sleep disorders.

In generalized seizures, the paroxysmal discharge is immediately propagated to both hemispheres, and therefore seems to involve the entire cerebral cortex simultaneously. The clinical characteristics of these

seizures therefore do not include any sign that could link them to an anatomo-functional system located in one of the two hemispheres. The motor manifestations, when they exist, are immediately bilateral and symmetrical.

There are different types of seizures:
1. tonic-clonic seizures: 3 phases
- The tonic phase lasting 10 to 20 seconds.
- The clonic phase lasting about 30 seconds
- The post-critical phase, lasting from a few minutes to around ten minutes.
2. tonic seizures: sustained, non-vibrational muscle contraction lasting at least a few seconds, associated with impaired consciousness, apnea and other autonomic disturbances.
3. clonic seizures: bilateral clonic jerks, sometimes asymmetrical, progressively slowed down, of variable duration, accompanied by an alteration of consciousness and post-critical obstinacy.
4. myoclonic seizures: simultaneous contraction of agonist and antagonist muscles, resulting in a sudden and brief jerk whose topography and intensity are variable, not accompanied by perceptible alteration of consciousness.
5. atonic seizures: dissolution of postural tone, causing a sudden and traumatic fall, sometimes limited to a simple fall of the head forward, associated with a brief loss of consciousness.
In partial or focal seizures, the paroxysmal discharge initially involves a limited sector of the cortical structures, the epileptogenic zone. This area is made up of a neuronal population confined to part of a single hemisphere. The first clinical signs of the seizure (Jackson's signal-symptom) are therefore of great localizing value, because they reflect the disorganization of the epileptogenic zone and/or very close structures.
The semiology of partial seizures depends directly on the anatomo-functional characteristics of the epileptogenic networks, formed by the different structures recruited by the propagation of the critical discharge from the epileptogenic zone. The sequential disorganization of these structures is responsible for extremely varied semiological formulas from one patient to another, but remarkably fixed from one seizure to another in the same patient.

II. Material And Methods

The study population includes all Algerian patients whose age of onset of the first seizure is 25 years or more, recruited at ALI AIT IDIR Hospital in Algiers.

Inclusion criteria:

1. The age of the patients must be greater than or equal to 25 years at the time of inclus.
2. Patient presenting with his first epileptic seizure at the age of 25 years or older.
3. Clinically and electrically confirmed diagnosis of epilepsy.

Exclusion criteria:

1. Age less than 25 years

III. Results

Our study population includes 336 patients, recruited during the period from January 2008 to December 2016. This figure corresponds to the number of patients selected according to the inclusion criteria.

Clinical features:

1. Semiology of epileptic seizures:

1.1 Type of seizure:

Table 1. Type of first seizure and usual seizure in the population

		Cases	%
Partial seizure	Simple partial	54	16,1
	Complex partial	68	20,2
	Simple partial secondarily generalized	27	8
	Complex partial secondarily generalized	89	26,5
Generalized seizure	Generalized tonic-clonic	86	25,6
Status epilepticus	Nonconvulsive status epilepticus	8	2,4
	Convulsive status epilepticus	4	1,2
Total		**336**	**100**

As already mentioned above, late onset epilepsies can result in all types of epileptic seizures except two: Petit Mal absences and massive epileptic myoclonus. The pathophysiology of these two types in fact implies the existence of an "epileptic thalamo-cortical loop" whose genesis is genetic and cannot be created by an acquired cerebral lesion.

Similarly, these two types of epileptic seizures (petit mal absences and massive epileptic myoclonus) are the prerogative of children and, if necessary, adolescents. They cannot begin after puberty.
Similarly, it should be noted that late-onset epilepsies do not only result in partial seizures, far from it. As our study shows, which thus joins the data of the Literature, they can be generalized (approximately 25% of the cases).

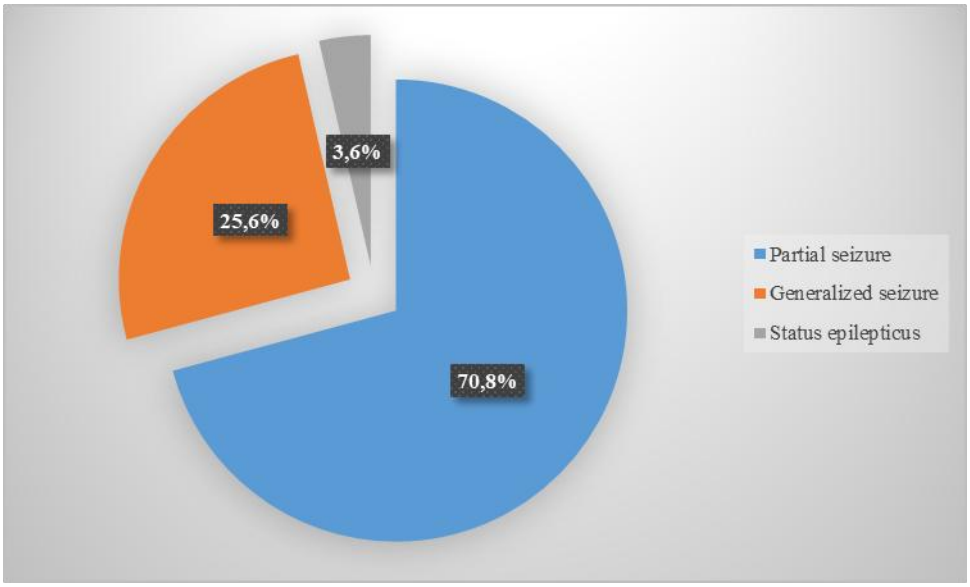

Figure 1. Frequency of late seizures by type of seizure
Partial seizures were the most frequent, about 70.8% of cases.

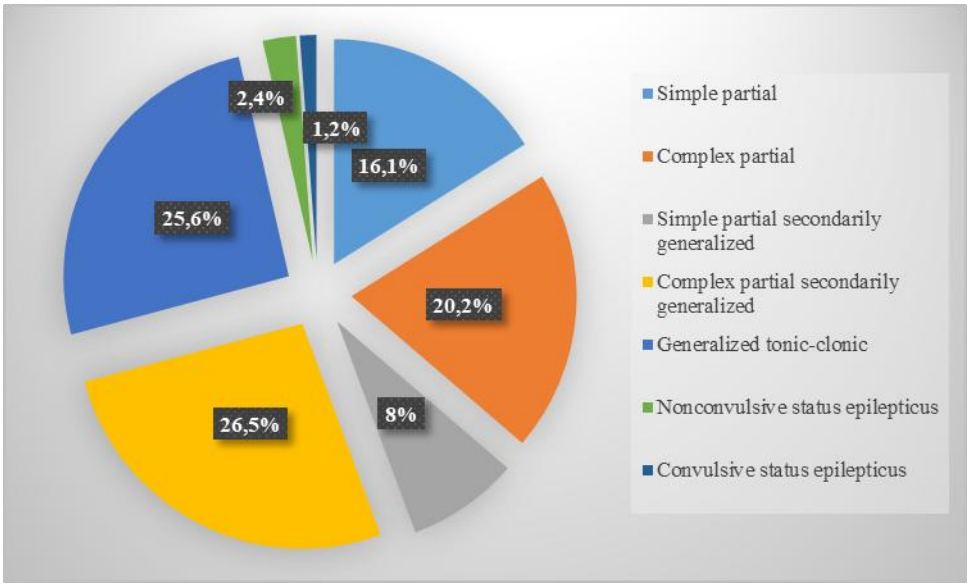

Figure 2. Distribution of patients according to type of seizures
Secondarily generalized complex partial seizures were the most represented, about 26.5% of cases.

Table 2. Type of first seizure and usual seizure by age group

	Simple partial	Complex partial	Simple partial Secondarily generalized	Complex partial Secondarily generalized	Generalized tonic-clonic	Non-convulsive status epilepticus	Convulsive status epilepticus	Total
25-29years	7	9	5	12	14	0	0	47
30-34 years	4	10	4	11	13	0	1	43
35-39 years	8	5	2	17	16	1	0	49
40-44 years	7	2	3	6	9	1	0	28
45-49 years	4	10	2	7	4	0	1	28
50-54 years	8	4	1	2	7	2	1	25

55-59 years	4	5	2	4	8	1	1	25
60-64 years	5	6	3	9	1	2	0	26
65-69 years	3	4	2	5	4	0	0	18
70-74 years	2	4	1	11	3	0	0	21
75-79 years	1	7	2	3	4	0	0	17
80 years and over	1	2	0	2	3	1	0	9
Total	**54**	**68**	**27**	**89**	**86**	**8**	**4**	**336**

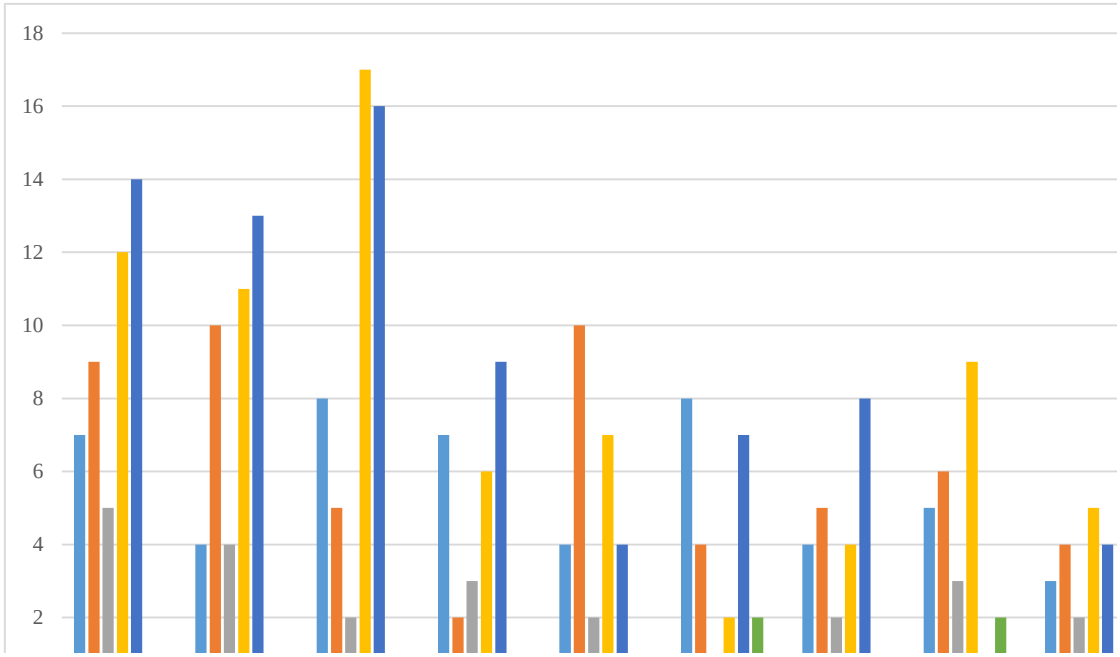

Figure 3. Type of first seizure and usual seizure by age group

The distribution by age group shows a decrease with age, more pronounced for partial seizures.

1.2. Distribution of partial seizures

Table 3. Distribution of partial seizures in the study population

		Cases	%
Partial seizure		**238**	**70,8**
	Simple partial	54	16,1
	Complex partial	68	20,2
	Simple partial secondarily generalized	27	8
	Complex partial secondarily generalized	89	26,5
Total		336	100

In the group of partial seizures, complex partial secondarily generalized seizures are the majority with 89 cases.

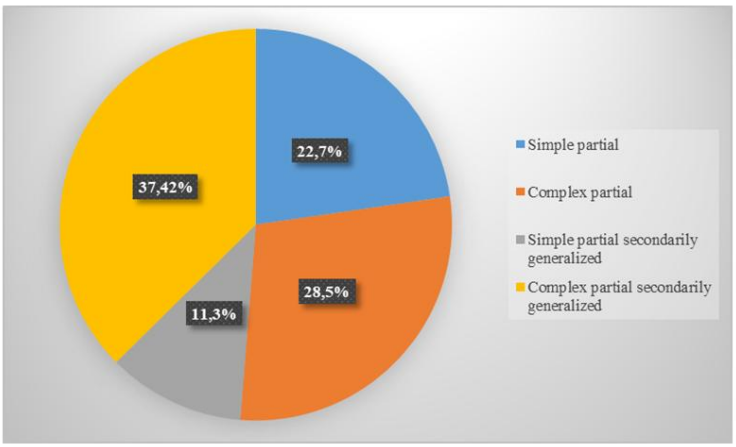

Figure 4. Frequency of Partial Seizures

IV. Discussion

Partial seizures represent 70.8% of seizures (238 patients) including 26.5% (89 cases) complex partial secondarily generalized , 20.2% (68 cases) complex partial, 16.1% (54 cases) simple partial , 8% (27 cases) simple partial secondarily generalized .
Generalized tonic-clonic seizures represent 25.6% of seizures (86 patients).
Status epilepticus represent 3.6% of seizures (12 patients) including 2.4% (8 cases) nonconvulsive status epilepticus and 1.2% (4 cases) convulsive status epilepticus.
The breakdown by age group shows a decrease with age, more pronounced for partial seizures than for generalized seizures.
Partial seizures are common in age groups (25-29 years, 30-34 years, 35-39 years, 45-49 years, and 60-64 years).
Generalized seizures are common in age groups (25-29 years, 30-34 years, and 35-39 years). The distribution by age group shows a decrease with age.
Partial seizures were the most frequent in our study, our results are consistent with data from the literature. This predominance of partial seizures is explained by the presence of a high rate of focal lesions in patients with late onset epilepsy.
Late-onset partial seizures are most often related to a specific cause (Weber, 1998) [2].
M.Belaidi et al, 1986 [1], found a preponderance of partial seizures with 54% of cases.
In the work of B. Basim A. Yakoub et al, 1986 [14], partial seizures are the type most encountered with 67% of cases, while the percentage of generalized seizures is 33%.
Daniel Arbaiza et al, 1995[9] had found a preponderance of partial seizures, partial seizures represent 62% of cases (simple partial 56% and complex partial seizures 6%), while the percentage of generalized seizures is around 37%.
Andre Oun et al, 2003[5], had noted a high rate of partial seizures, of which more than half of the cases are partial secondarily generalized seizures (partial seizures 74.2%, generalized seizures 5.8%).
Guy Fong et al, 2003[16], had found a higher percentage in subjects with partial seizures 55.4%, against 38.7% in subjects with generalized seizures.

Marie Christine Picot et al, 2008[3] had shown that partial seizures represented 61.1% of cases, while the percentage of generalized tonic-clonic seizures is around 30.9% of cases.
Roberto Suastegui et al, 2009 [7] had observed a dominance of partial seizures, with a percentage of 51%, against 49% represented by generalized seizures. In the study by Ewan Hunter et al, 2012 [10]; these are almost exclusively partial seizures at 71.5%, on the other hand generalized seizures present only 2.4%.
Elina Melikyan et al, 2012[6], had found a high percentage of partial seizures 69.7%, while generalized seizures represent only 8.7% of cases. In the epidemiological work of Handy N.El-Tallawy, 2012[11], the representation by age group shows increase with age, more pronounced for partial seizures than for generalized seizures. For the age group (18-39 years) 49.6% is partial seizures against 44.1% represented by generalized seizures. For the age group (40-59 years) 69.2% against 26.9%. For the age group age ≥60 years 73.7% against 26.3%.
Pedro J. Serrano-Castro et al, 2015 [18] had also noticed the frequency of partial seizures. Partial seizures with or without secondary generalization 59.1% of seizures, against 36.4% with generalized tonic-clonic seizures.
It should be noted the predominance of partial seizures in the study by Sudhir Chalasani et al, 2015[17] with 56.13% of partial seizures (simple partial 14.54%, complex partial 18.18%, secondarily generalized 67.25%) against 43.87% of cases represented by generalized seizures.

Table 4. Literature review of type of seizure in late-onset epilepsy in which partial seizures are dominant

Study	Country	Partial seizures (%)	Generalized seizures (%)	Simple partial seizures (%)	Complex partial seizures (%)
M.Belaidi et al, 1986	France	54%	46%	8.1%	10.8%
Basim.A.Yakoub, C.Panayiotopoulos, 1986	Saudi Arabia	67%	33%	ND	ND
Daniel Arbaiza et al, 1995	Peru	62%	37%	56%	6%
Andre Oun et al, 2003	Estonia	74.2%	5.8%	13.9%	20.2%
Guy Fong et al, 2003	Hong Kong	55.4%	38.7%	ND	ND
Marie-Christine Picot et al, 2008	France	61.1%	30.9%	ND	ND
Roberto Suastegui et al, 2009	Mexico	51%	49%	25%	14.7%
Ewan Hunter et al, 2012	Tanzania	71.5%	2.4%	ND	ND
Elina Melikyan et al, 2012	Russia	69.7%	8.7%	ND	ND
Hamdy N. El-Tallawy, 2012	Egypt	18-39 years 49.6%	44.1%	ND	ND
		40-59 years	26.9%		

		69.2%			
		≥60 years 73.7%	26.3%		
Pedro J. Serrano-Castro et al, 2015	Spain	59.1%	36.4%	ND	ND
Sudhir Chalazani et al, 2015	India	56.1%	43.9%	14.5%	18.1%

ND: Not Documented

Our results are however different from some studies. For some authors, generalized seizures are the most frequent. This could be explained by the presence of bias in the clinical description of the seizures by the entourage (partial secondarily generalized seizures taken for generalized seizures from the outset), or a certain number of partial secondarily generalized seizures that have gone unnoticed; the point of which of departure would be difficult to highlight.

R. Sridharan et al, 1986 [12], had shown a frequency of generalized seizures at 55.6%, against 33.4% of partial seizures.

Anthony Hopkins, 1988 [4], had highlighted generalized tonic-clonic seizures in 97.5% of patients, partial seizures in 2.2% of patients. It should also be noted that David Ortega et al, 2003 [8], had found a predominance of generalized seizures at 84%, against a rate of 16% represented by partial seizures.

Christian Napon et al, 2009 [13], observed that generalized tonic-clonic seizures were the most common type of seizure. The various seizures presented by the patients were generalized in 58.6%, partial in 41.4% of the cases.

Sardar MH et al, 2011 [15], observed a generalized seizure frequency of 50%. On the other hand, partial seizures are encountered in 47.7% of patients.

In our study, the status epilepticus represents 3.6% of cases (12 cases). We note eight cases of nonconvulsive status epilepticus with confusional expression and four cases of convulsive status epilepticus.

V. Conclusion

Our study population includes 336 patients, recruited during the period from January 2008 to December 2016. These patients were selected according to the inclusion criteria.

During the study period, 336 cases of late epilepsy were diagnosed, representing a proportion of late epilepsy of 34% compared to all epilepsy.

Partial seizures were the most common in 70.8% of cases: complex partial secondarily generalized 26.5%, complex partial 20.2%, simple partial 16.1%, simple partial secondarily generalized 8%. Complex partial secondarily generalized seizures were the most represented, about 26.5% of cases .They were generalized in 25.6%. Status epilepticus represent 3.6% of seizures, including 2.4% nonconvulsive status and 1.2% convulsive status. The distribution by age group shows a decrease with age, more pronounced for partial seizures. Partial seizures are common in age groups (25-29 years, 30-34 years, 35-39 years, 45-49 years, and 60-64 years).

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