



## ❖ KINETOTHERAPY

### ROLE OF KYNETOTHERAPY IN ACUTE HEMORRHAGIC STROKE

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#### Abstract

Hemorrhagic stroke represents 10% of total stroke number, with high mortality and devastating impact on patients life's. Because hemorrhagic stroke is associated with severe invalidity and high costs for hospitalization and recovery it is important to now first and second stroke prevention.

Our study included 30 patients diagnosed and treated in our clinic over a period of 4 months. We measured the volume of hemorrhage and assessed the impact of disease with FMA (Fugl-Meyer Assessment) scale.

Our study proved a high mortality among hemorrhagic stroke patients. The majority number of patients involved in study have shown an improvement of initial clinical state after kynetotherapy in early days of stroke.

Mortality in hemorrhagic stroke is high, comparable with that cited in literature.

The volume of hemorrhage is a predictable factor for the evolution of patient.

Kynetotherapy in early days oh hemorrhagic stroke proved to be useful.

**Key words:** hemorrhagic stroke, CT, kinetotherapy

#### Introduction

Cerebral hemorrhage represents approximately 10% of all strokes. The main etiology of cerebral hemorrhage is arterial hypertension, specially that without treatment. Other clinical conditions involved are: aneurisms, angiomas, drug abuse (cocaine, amphetamines) or alcohol, sanguine dyscrasias, anticlotting therapy, amyloid angiosis and cerebral tumors (P.B. Gorelick, 1987; Hypertension Detection and Follow-up Program Cooperative Group, 1982). Clinical features of cerebral hemorrhage depends on localization and volume of bleeding. To formulate a complete stroke diagnosis means to establish the ethiopatogeny, topography and outcome. In generally, clinical diagnosis is usually referred as a syndrome diagnosis, the ischemic or hemorrhage nature of stroke being supposed on clinical signs, but for an adequate therapeutic strategy it is necessary to perform imagistic investigation such as computerized tomography (CT) and magnetic resonance imaging (MRI). Considering the gravity of a stroke, the high mortality associated with this condition, the degree of invalidity and difficulties of social rehabilitation combined with high costs of treatment it is obvious why first and second prophylaxis is so important. Another goal is to have a better organization of medical services for being able to diagnose and treat most rapidly possible this kind of pathology and also making the rehabilitation of this patients easier (H. Iso et al., 1989).

#### Material and method

Our study is a prospective analysis of 30 cases diagnosed and treated for Hemorrhagic Stroke for a period of four months in 2009 (15 June-15 October),

who took place in Neurology Clinic of General County Hospital of Constanta. Using imaging investigation, such as computerised tomography, we have been able to identify patients with intracerebral hemorrhage; were admitted only patients with supratentorial hemorrhage. In order to calculate hemorrhagic volume we used a formula based on multiplying maximum diameters of hemorrhage with number of CT slices (in which the hemorrhage can be seen), all of that divided by two. Based on the volume of hemorrhage we performed the following classification: small, medium and large (Adams). To appreciate the impact of hemorrhage on patients performs we used the FMA scale (Fugl-Meyer Assessment), a stroke-specific, performance-based impairment index. It is designed to assess motor functioning, balance, sensation and joint functioning in hemiplegic post-stroke patients. It is applied clinically and in research to determine disease severity, describe motor recovery, and to plan and assess treatment. The scale is comprised of five domains and has 155 items in total. The domains are: motor functioning (in the upper and lower extremities), sensory functioning (evaluates light touch on two surfaces of the arm and leg, and position sense for 8 joints), balance (contains 7 tests, 3 seated and 4 standing), joint range of motion (8 joints) and joint pain. Scoring is based on direct observation of performance. Scale items are scored on the basis of ability to complete the item using a 3-point

ordinal scale where 0=cannot perform, 1=performs partially and 2=performs fully. The total possible scale score is 226. Classifications for impairment severity have been proposed based on FMA Total motor scores (out of 100 points): under 50 severe; 50-84 hemiplegia, 85-94 hemiparesis, 95-99 slight motor dyscoordination. There are few studies in literature that refer to clinical features and prognosis in patients with supratentorial haemorrhage, using volume and localization (S.M. Davis et al., 2006; J.P. Broderick et al., 2007), our study correlating hemorrhagic volume (calculated on CT) with early rehabilitation methods.

**Results and discussion**

Between 15 June 2009 and 15 October 2009 in Neurology Clinic of Emergency Clinical County Hospital of Constanta were admitted and diagnosed with hemorrhagic stroke 52 patients, of whom 19 have deceased, 3 patients in critical condition were discharged at family request, and the other 30 were treated in our clinic.(figure 1).

The results of our study, based on measuring the volume of cerebral hemorrhage on CT scan, in all 30 patients treated for this condition in our clinic, showed that the volumes were mostly medium (10-50

ml). We illustrated the dimension of hemorrhage in graphic 1. Related to brain localization of hemorrhage our analysis showed a preponderance of lobar hemorrhage (46%), as it is seen in graphic 2. The outcome for those 30 patients admitted in our study was the following: 18 were discharged recovered, 10 patients were stationary and 2 were agravated, as it can be seen in graphic 3. Of the all 30 patients only 15 followed an individual kinetotherapy program, started on the first days after stroke, of those 13 patients were discharged recovered and 2 clinical stationary. This results prove the importance of early kinetotherapy in cerebral hemorrhage (figure 2, graphic 5). Considering the results of our study, we affirm that kinetotherapy has proved satisfactory, specially for small and medium cerebral hemorrhage (graphic 4). Motor deficit, quantified by FMA scale, had improved after kinetotherapy, see graphic 6.

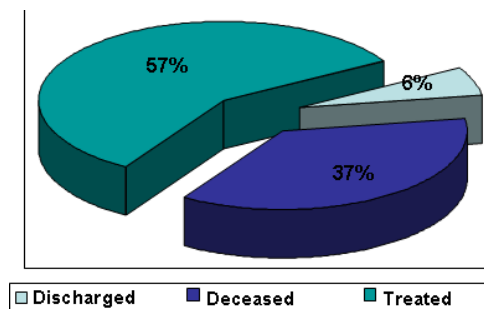
**Conclusions**

In our study the mortality of hemorrhagic stroke proved to be high, comparable with other studies.

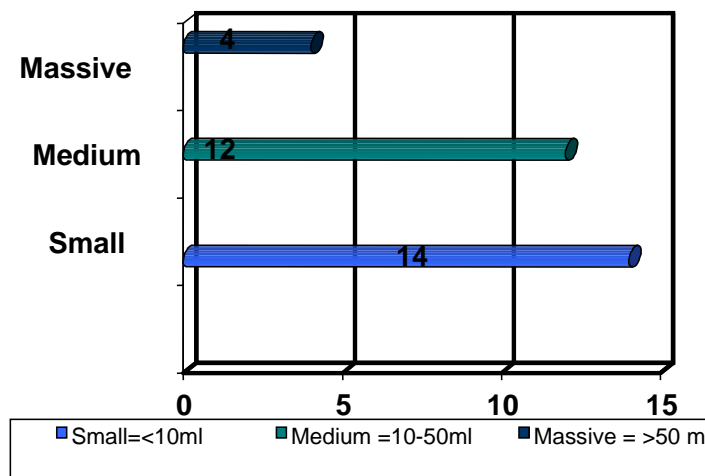
The hemorrhage volume is a predictive factor for the clinical prognosis.

The use of kinetotherapy in acute hemorrhagic stroke proves to be useful.

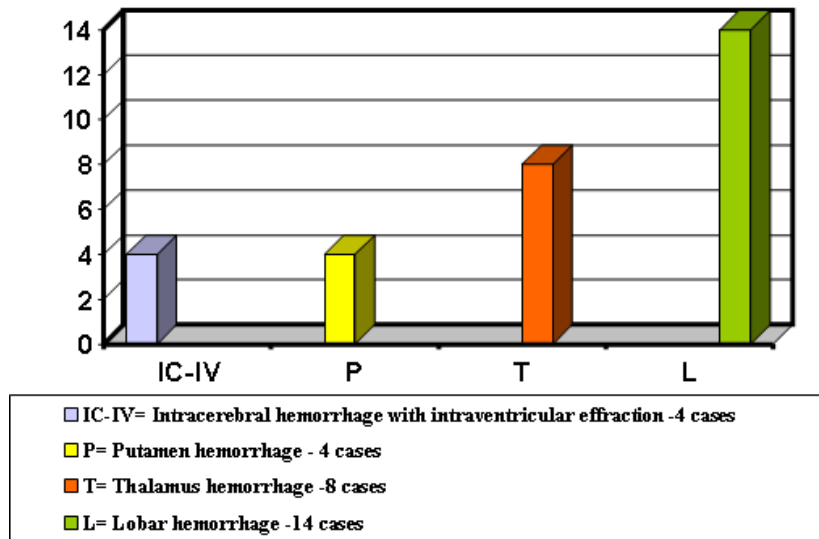
Fig. 1 Patients with hemorrhagic stroke in our study



Graph 1. Hemorrhage volume calculated on CT.



Graph 2. Hemorrhagic stroke localisation



Graph 3. Patients outcome in our study.

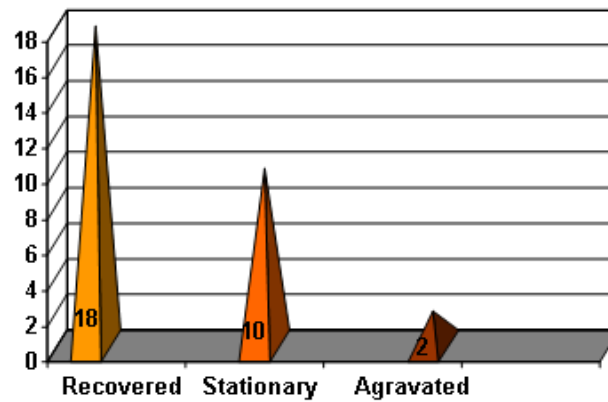
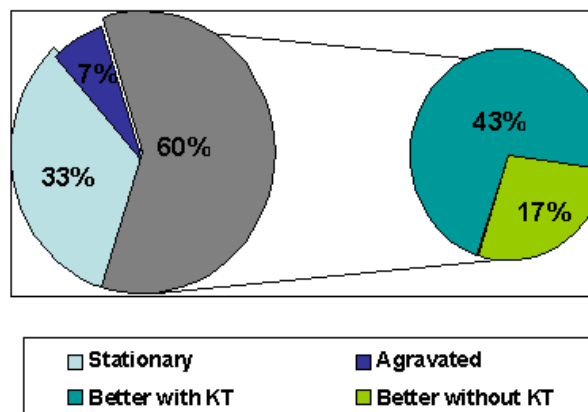
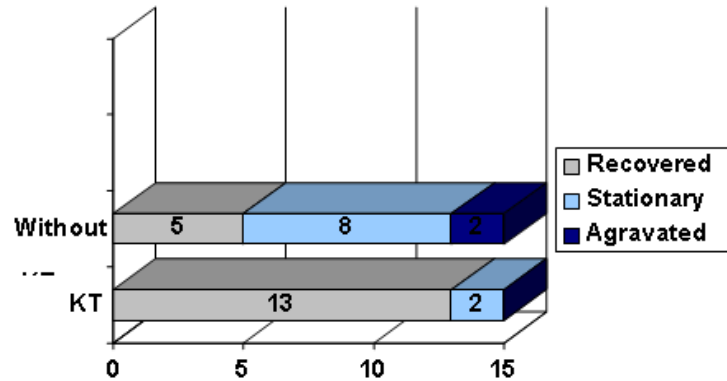


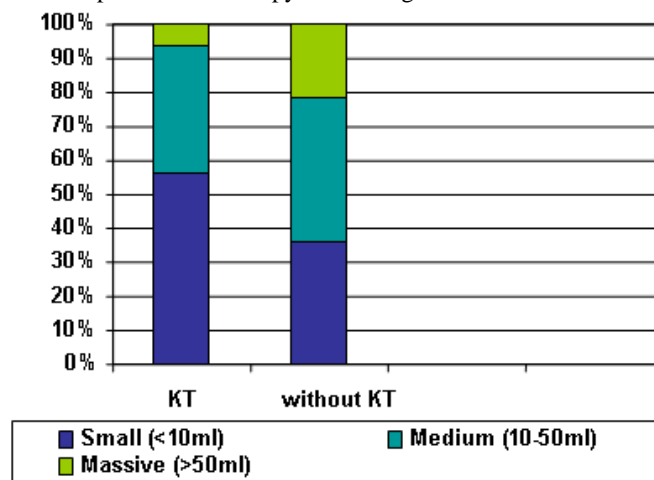
Fig 2. Outcome in correlation with kinetotherapy



Graph 5. Outcome in correlation with kinetotherapy



Graph 4. Kinetotherapy-hemorrhage volume correlation



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