

Original Article

## The Frequency of Recurrence in Primary Hypertensive Intracerebral Hemorrhage

S.A. Mousavi MD\*, S.M. Nourian MD\*, M. Zare MD\*\*

### ABSTRACT

**Background:** Primary intracerebral Hemorrhage (PICH) is a devastating illness with high early mortality which causes 10 -12 percent of stroke cases. Survivors of PICH are at risk for recurrence of hemorrhage. We wanted to determine the frequency of recurrence of ICH in patients with PICH at Alzahra and Noor hospital Isfahan, Iran.

**Methods:** A descriptive retrospective study was did on the hospital records of patients with a discharge diagnosis of intracerebral hemorrhage to identify the cases. Data were gathered by means of a check list and were analysed by using SPSS statistical software.

**Results:** A total number of 660 cases were identified by computer search. After abstraction, 400 patients with primary hypertensive intracerebral hemorrhage were identified. Widespread distribution of recurrence of ICH were 65 cases which 33 cases of them were men and 32 cases were women.

**Conclusion:** Totally, 16 .25 percent of patients had recurrence which is greater risk of recurrence in comparison to other studies.

**Key Words:** Intracerebral Hemorrhage, hypertension, recurrence of Intracerebral Hemorrhage

JRMS 2006; 11(1): 31-33

Stroke is the most common life threatening neurologic disease and is the third leading cause of death<sup>1, 2</sup>. Stroke is classified by the pathology of underlying focal brain injury that is either infarction or hemorrhage<sup>3</sup>. Approximately, 10 - 20 percent of strokes are intracerebral hemorrhage (ICH) which is the most common cause of death<sup>1, 2, 3</sup>. The role of hypertension as a leading risk factor for ICH is well established<sup>1, 2, 3, 4</sup>. Mortality of primary hypertensive ICH is 30 - 35 percent in first month of attack<sup>1, 2, 3</sup>. The more common sites of hemorrhage at primary hypertensive Intracerebral Hemorrhage are: putamen and internal capsule, lobes, thalamus, Cerebellum, and Pons<sup>1, 2, 3</sup>. In some studies the lobar site is the second common site of hemorrhage<sup>3</sup>. In the patients with recurrence, lobar location of

hemorrhage is a known predictor of recurrence<sup>5</sup>. Among the survivors of Primary hypertensive intracerebral hemorrhage, the recurrence of hemorrhage was very rare<sup>2, 3</sup>. In previous studies, the rate of recurrence of ICH was different. Clinical and pathological evidences of recurrent ICH are controversial<sup>6</sup>. Autopsy studies have suggested that up to 25 percent of patients dying of ICH had had previous hemorrhage<sup>6</sup>. With regards to importance of recurrence of ICH, the aim of this study was to evaluate the recurrence of ICH in Iran.

### Subjects and Methods

Records of patients discharge diagnoses at the Alzahra and Noor medical centers, Isfahan, Iran, were reviewed for diagnosis of ICH from

\*Assistant Professor, Department of Neurology, Isfahan University of Medical Sciences, Isfahan, Iran.

\*\*Associated Professor, Department of Neurology, Isfahan University of Medical Sciences, Isfahan, Iran.

Correspondence to: Dr. Seyed Ali Mousavi, Assistant Professor, Department of Neurology, Alzahra Hospital, Isfahan, Iran.

E-mail: a\_mousavi@med.mui.ac.ir

1995 to 1999. All medical records were reviewed by means of a check list which included demographic data, type, location, and recurrence of ICH, and also the history and treatment of hypertension. Primary hypertensive ICH was divided into five subtypes including putamen, thalamic, lobar, pontine, and cerebellar hemorrhage. Data were analysed by using SPSS, 11.5 statistical software. Descriptive statistical methods, comprising percentage, standard deviation, and mean of data were applied for data analysis.

## Results

Medical records of 660 patients showed intracerebral hemorrhage that 400 patients (60.6 percent) of these, had history of hypertension.

65 cases had recurrence of ICH, which 33 cases of them were men (50.8 percent) and 32 patients were women (49.2percent).

The age of patients with recurrence were between 40 to 79 years of old that 42 cases (64.6 percent) were between 60 to 79 and 15 cases (35.4 percent) were between 40 to 59 years of old. The most frequent site of hemorrhage in patients with recurrence was in lobar region (73.8 percent). In this respect the frequency of attacks were greater in lobar hemorrhage and the difference between location and frequency of hemorrhage was significant ( $P < 0.01$ ).

Based on the history, only 3 patients with recurrence of ICH had normal blood pressure and most the patients had uncontrolled hypertension.

50.8 percent ( $n = 33$ ) of patients with recurrence of ICH had not used any antihypertensive drug, 35.4 percent ( $n = 23$ ) had not used antihypertensive drugs in regular programme, and 13.8 percent ( $n = 9$ ) had not used antihypertensive drugs in irregular manner.

In regard to attacks of recurrence of ICH, 81.5 percent ( $n = 53$ ) of patients had one attack and 18.5 percent ( $n = 12$ ) of them had two attacks. In this aspect, there was not any difference between location of hemorrhage and attacks.

## Discussion

Clinical studies have suggested that the recurrence of ICH is rare<sup>1, 2</sup>. But recent reports suggest that recurrent hemorrhage due to hypertension may be more common than what was previously believed<sup>7, 8</sup>. In one study which was done in Toronto hospital, Toronto, Canada, the rate of recurrence of ICH were 2.4 percent<sup>9</sup>.

In the other study which was done in India, the rate of recurrence of ICH was 5 cases in 105 patients who were referred with ICH<sup>10</sup>.

In another study which was done in Taiwan, from 802 patients who were referred with ICH for two consequence years, ICH has been recurred in 47 patients that showed the rate of recurrence as 5.3 percent<sup>11</sup>.

In another study which was done in Mexico, the rate of recurrence of ICH was 6.1 percent<sup>11</sup>.

In above studies all patients with recurrence of ICH had controlled hypertension treatment. In the present study, the rate of recurrence of ICH was high in comparison with other similar studies which have been done in other countries<sup>9, 10, 11</sup>. The central role of blood pressure in pathogenesis of stroke and especially ICH is known from many years ago<sup>1, 2</sup> and epidemiologic studies have showed that treating the hypertension can reduce mortality and morbidity of stroke and control of blood pressure has a major role in prevention of recurrent stroke.

Also, control of blood pressure has useful effects on reducing the onset of ICH and prevention of its recurrence<sup>1, 2, 3, 4</sup>. In present study, 95.4 percent of patients with recurrent ICH had a history of uncontrolled hypertension that is higher than other studies<sup>9</sup> and may depend on several factors such as poor follow up of our patients, poor knowledge of our patients about control of Blood Pressure, and poor knowledge about life style developing program. For this reasons, strict program for control of blood pressure in general population and secondary prevention for patients who have stroke are needed. This purpose could be obtained with programs for treatment

of hypertension, education, and political actions for improving national health and stroke prevention that it can be achieved by planning for organization of stroke management.

Lobar location of the hemorrhage was the only significant predictor of recurrence and have increased the risk of recurrence of ICH in previous studies<sup>7,8,9</sup>. It may be supported with growing evidence suggests that genetic factors,

such as the possession of the 2 and 4 alleles of the apolipoprotein E, play an important role in the occurrence of lobar hemorrhage<sup>11</sup>. In this study the most common site of recurrence of ICH was lobar region, that with regards to this result, we should pay more attention to lobar ICH. Also this study showed that the range of age of occurrence and recurrence of ICH is higher in comparison with other studies<sup>1,2,3,11</sup>.

## References

1. Adams RD, Victor MA. *Cerebrovascular Disease*. In: Adams RD, Victor MA, editors. *Adams and Victor's principles of neurology*. 7<sup>th</sup> ed. New York: MC Graw-Hill; 2001. p.881-8.
2. Barnett HJM, Yatsu FM, Mohr JP, Stein BM, editors. *Stroke: Pathophysiology, Diagnosis, and Management*. 3<sup>rd</sup> ed. New York: Churchill Livingstone; 1998. p.649-90.
3. Toole JF. *Vascular Disease*. In: Rowland P, editor. *Merritt's textbook of neurology*. 10<sup>th</sup> ed. Philadelphia: Williams & Wilkins; 2000. p.224-5
4. Trift AG, Mcniel JJ, Forbes A, Donnan GA. Three important subgroups of hypertensive persons at greater risk of intracerebral hemorrhage. Melbourne Risk Factor Study Group. *Hypertension*. 1998 Jun;31(6):1223-9.
5. Bogousslavsky J, Van Melle G, Regli F. The Lausanne Stroke Registry: analysis of 1,000 consecutive patients with first stroke. *Stroke*. 1988 Sep;19(9):1083-92.
6. Kane WC, Aronson SM. Cerebrovascular disease in an autopsy population. I. Influence of age, ethnic background, sex and cardiomegaly upon frequency of cerebral hemorrhage. *Arch Neurol*. 1969 May;20(5):514-26.
7. Ruiz-Sandoval JL, Cantu C, Barinagarrementeria F. Intracerebral hemorrhage in young people: analysis of risk factors, location, causes, and prognosis. *Stroke*. 1999 Mar;30(3):537-41.
8. Hill MD, Silver FL, Austin PC, Tu JV. Rate of stroke recurrence in patients with primary intracerebral hemorrhage. *Stroke*. 2000 Jan;31(1):123-7.
9. Mirsa UK, Kalita J. Case reports: recurrent hypertensive intracerebral hemorrhage. *Am J Med Sci*. 1995 Oct;310(4):156-7.
10. Chen ST, Chiang CY, Hsu CY, Lee TH, Tang LM. Recurrent hypertensive intracerebral hemorrhage. *Acta Neurol Scand*. 1995 Feb;91(2):128-32.
11. *Vascular Diseases of the Nervous System: Intracerebral Hemorrhage*. In: Walter G. Bradley, Robert B. Daroff, Gerald M. Fenichel, Joseph Jankovic. *Neurology in Clinical Practice*. 4<sup>th</sup> ed. Philadelphia: Elsevier; 2004. p.1251-64.