**Clinical correlation between the amount of spontaneous subarachnoid hemorrhage and the patients early neurological status**

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**Abstract**

Objective: clinical assessment between degree of subarachnoid bleeding and patients early neurological status.

 Patients and methods: thirty cases were involved in this study,, from may 2010 to may 2011 at kasr el aini emergency department, All cases had full examination as regard history,clinical examination,CT on admission , CT F/U every 48hrs for 2 weeks .CT angiography or 4 vessels angiography .

Results: 1 case was Gr.I and had Gr. III bleeding, 20 cases were Gr. II ( 2 cases had Gr.II, 16 had Gr.III and 2 had Gr.IV bleeding), 7 cases were Gr.III (2 cases had Gr.II and 5 had Gr. III bleeding)and finally 2 cases were Gr.IV and had Gr. IV bleeding.

Conclusion: in my study I did not experience a significant influence of amount of subarachnoid bleeding in the patients early neurological status and may be other factors such as vascular insults , hydrocephalus and other major organs problems.

 **Key words**: subarachnoid hemorrhage, fisher grade, hunt and hess grade

**INTRODUCTION:**

A subarachnoid hemorrhage is [bleeding](http://en.wikipedia.org/wiki/Bleeding) into the [subarachnoid space](http://en.wikipedia.org/wiki/Subarachnoid_space) ,the area between the [arachnoid membrane](http://en.wikipedia.org/wiki/Arachnoid_%28brain%29) and the [pia mater](http://en.wikipedia.org/wiki/Pia_mater) surrounding the [brain](http://en.wikipedia.org/wiki/Human_brain).

[Symptoms](http://en.wikipedia.org/wiki/Symptom) of SAH include a severe symptoms of SAH include severe [headache](http://en.wikipedia.org/wiki/Headache) with a rapid onset ("[thunderclap headache](http://en.wikipedia.org/wiki/Thunderclap_headache)"), [vomiting](http://en.wikipedia.org/wiki/Vomiting), confusion or a lowered [level of consciousness](http://en.wikipedia.org/wiki/Level_of_consciousness), and sometimes [seizures](http://en.wikipedia.org/wiki/Seizure)1

SAH is a form of [stroke](http://en.wikipedia.org/wiki/Stroke) and comprises 1–7% of all strokes.2 It is a [medical emergency](http://en.wikipedia.org/wiki/Medical_emergency) and can lead to death or severe [disability](http://en.wikipedia.org/wiki/Disability). Up to half of all cases of SAH are fatal and 10–15% die before reaching a hospital, and those who

or may result from head injury , and [pituitary apoplexy](http://en.wikipedia.org/wiki/Pituitary_apoplexy) can also result in SAH.6

 survive often have neurological or cognitive impairment3

As a result of the bleeding, the body releases large amounts of [adrenaline](http://en.wikipedia.org/wiki/Adrenaline). This leads to a sharp increase in the [blood pressure](http://en.wikipedia.org/wiki/Blood_pressure); the heart comes under substantial strain, and [neurogenic](http://en.wikipedia.org/wiki/Neurogenic) [pulmonary edema](http://en.wikipedia.org/wiki/Pulmonary_edema) .[cardiac arrhythmias](http://en.wikipedia.org/wiki/Cardiac_arrhythmia)4-5

## CAUSES:

In 85% of cases of spontaneous SAH, the cause is rupture of a cerebral aneurysm.1 In 15–20% of cases of spontaneous SAH, no aneurysm is detected on the first [angiogram](http://en.wikipedia.org/wiki/Angiogram).6 About half of these are attributed to non- Aneurysmal perimesencephalic hemorrhage1 .The remainder are due to other disorders affecting the blood vessels (such as [arteriovenous malformations](http://en.wikipedia.org/wiki/Cerebral_arteriovenous_malformation)), disorders of the blood vessels in the [spinal cord](http://en.wikipedia.org/wiki/Spinal_cord), and bleeding into various [tumors](http://en.wikipedia.org/wiki/Tumor).1 [Cocaine](http://en.wikipedia.org/wiki/Cocaine) abuse and [sickle cell anemia](http://en.wikipedia.org/wiki/Sickle_cell_anemia) (usually in children) and, rarely, [anticoagulant](http://en.wikipedia.org/wiki/Anticoagulant) therapy,

**DIAGNOSIS:**

 The modality of choice is [computed tomography](http://en.wikipedia.org/wiki/Computed_tomography) (CT scan) of the brain. [Magnetic resonance imaging](http://en.wikipedia.org/wiki/Magnetic_resonance_imaging) (MRI) may be more sensitive than CT after several days.1

After a subarachnoid hemorrhage is confirmed, its origin needs to be determined, the choice is between [cerebral angiography](http://en.wikipedia.org/wiki/Cerebral_angiography) and [CT angiography](http://en.wikipedia.org/wiki/Computed_tomography_angiography) 1,3

The Fisher Grade classifies the appearance of subarachnoid hemorrhage on CT scan.This scale has been modified by Claassen and coworkers, reflecting the additive risk from SAH size and accompanying [intraventricular hemorrhage](http://en.wikipedia.org/wiki/Intraventricular_hemorrhage).7

Patients neurological status were classified according to Hunt and Hess grade 8,9

|  |  |
| --- | --- |
| **grade** | **Appearance of hemorrahge** |
| **I** | None evident |
| **II** | Less than 1 mm thick |
| **III** | More than 1 mm thick |
| **IV** | Any thickness with intraventricular hemorrhage or [parenchymal](http://en.wikipedia.org/wiki/Parenchymal) extension |

 **Fisher grade**

|  |  |
| --- | --- |
| **0** | Non aneuryzmal rupture ,asymptomatic |
| **1** | mild headache, slight nuchal rigidity |
| **2** | Moderate to severe headache, nuchal rigidity, no neurologic deficit other than cranial nerve palsy |
| **3** | Drowsiness / confusion, mild focal neurologic deficit |
| **4** | Stupor,moderate-severe hemiparesis |
| **5** | Coma, decerebrate posturing |
| Add 1 grade if major concurrent health problem associated |

**Hunt and Hess grade**

**PATIENTS AND METHODS:**

Thirty cases were involved in this study,15 males and 15 females, from may 2010 to may 2011, at the emergency department , of Kasr- EL Aini medical school, age was ranging from 25 yrs upto 65 yrs .All cases had full examination as regard history,clinical examination,CT on admission,CT angiography or 4 vessels angiography and CT f/u after 48hrs for 2 weeks.Patients neurological status were evaluated according to Hunt and Hess grading , amount of subarachnoid bleeding was evaluated by Fisher grade. Patients with deteriorated neurological status Hunt &Hess grade zero upto grdae III and had hydrocephalus have gone under conservative traetment , patients with grade more than III and had hydrocephalus had v-p shunts.

**RESULTS:**

 Thirty cases were involved in this study,15 males and 15 females, age was ranging from 25yrs upto 65 yrs,with mean age of 45yrs. 1 case (3.3%) was Gr.I and had Gr. III bleeding, 20 cases (66.7%) were Gr. II ( 2 cases had Gr.II, 16 had Gr.III and 2 had Gr.IV bleeding), 7 cases (23.3%) were Gr.III (2 cases had Gr.II and 5 had Gr. III bleeding)and finally 2 cases (6.7%) were Gr.IV and had Gr. IV bleeding.

There were 4 cases (13.3%) had Gr.II bleeding , 22 cases (73.4%) had Gr.III bleeding and 4 cases (13.3%) had Gr.IV bleeding.

**DISCUSSION:**

Spontaneous subarachnoid hemorrhage (hemorrhage between pia and arachnoid matter of the brain) has many causes ,one of the major causes is rupture of vascular lesions such as aneuryzms or arterio-venous malformation. Subarachnoid hemorrhage can lead to deterioration of conscious level either by causing acute hydrocephalus by obstruction of CSF pathway or chronic hydrocephalus by development of subarachnoid gliosis , vascular insult itself, vasospasm or systemic troubles of cardiac and other organs.

Thirty cases of subarachnoid hemorrhage with variable grades of bleeding according to Fisher grade enrolled in our study from may 2010 to may 2011. Patients neurological status were classified by Hunt and Hess grade.

Subarachnoid hemorrhage Gr.III and Gr.IV considered to be major amount of bleeding .

Hunt and Hess Gr.IV and Gr.V considered to be major deterioration of conscious level.

Grade III and IV bleeding were 26 cases (86.7%), 24 ones (80%) were Hunt and Hess Gr.III and less grades , 2 cases (6.3%) were Gr.IV.

Gr.II bleeding were 4 cases (13.3%), 2 cases were Gr.II and 2 cases were Gr.III.

Major percentage of cases had large amount of bleeding but had good grades of conscious level.

**CONCLUSION: S**ubarachnoid hemorrhage is a major problem that may affect the patients neurological status , but in my study I did not experience a significant influence of amount of subarachnoid bleeding in the patients early neurological status and may be other factors such as vascular insults ,hydrocephalus and other major organs problems.Whever it may has a role in late deterioration by its influence in developing vasospasm.

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