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POTENTIAL PREDICTIVE FACTORS IN ASSESSING AND KNOWING THE COMPLICATIONS OF PATIENTS WITH INTRACRANIAL ANEURYSMS

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Abstract
This paper aims to evaluate and study the complications of patients with intracranial aneurysms ,and This study consisted of two groups Ruptured Aneurysms (100 patients) and Unruptured Aneurysms (50).
Approvals and licenses for this study were obtained by the relevant committees. Information and demographic data for patients were collected from different hospitals in Iraq, where this study was conducted retrospectively.
The two groups were compared to found the effect of complications on patients, and we note that there is a statistical relationship between the two groups <0.001
We conclude from this study that aneurysms are pathological aneurysms in the lumen of blood vessels. The rupture of the aneurysm leads to subarachnoid hemorrhage and thus to haemorrhagic stroke.
The mortality rate, in this case, is moderate, in addition to the presence of serious neurological problems.

Keywords: intracranial aneurysms, haemorrhagic, Unruptured, Asymptomatic, neurological

Introduction

ruptured aneurysms are a pathological dilatation of cerebral vessels in which blood accumulates. The rupture causes severe brain damage [1,2].

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In an aneurysm, the neck, body, and dome are isolated. The neck of the aneurysm retains the three-layer structure of the aneurysm wall and therefore is the most permanent part of the aneurysm, while the dome is represented by only one layer of connective tissue, so the aneurysm wall in this part is the thinnest and often prone for rupture [3,4,5]

Treatment of a cerebral aneurysm depends on its size, location, symptoms, and the patient's general condition. The goal of treatment is to prevent possible bleeding. Asymptomatic aneurysms with a size of up to 7 mm are not treated since the risk of surgery is greater than the consequences of bleeding. In this case, the patient is under constant observation [6,7,8].

This study focused on making a preliminary comparison by relying on the results in calculating mortality and treatment methods, in addition to the presence of some complications [9,10,11].

Aneurysms of the brain Almost all diseases of the blood vessels of the brain have a common symptom - cerebral aneurysms are no exception.

The appearance of neurological symptoms is associated with compression of various nerve formations by an aneurysm: cranial nerves, parts of the brain, and adjacent vessels. The most common complaint of people with intracranial vascular malformations is headache; it can have a different character, localization, and intensity [12,13,14].

Migraine-like pains are possible with pinching of one-half of the head and pain in the back of the head, neck, or eyeball. The localization of the discomfort depends on the location of the aneurysm [15,16]. If the outflow of fluid is disturbed, then hydrocephalus syndrome may develop due to increased intracranial pressure, accompanied by a diffuse headache with a feeling of pressure on the eyeballs and nausea [15,16,17,18].

Material and method

Study Sample

A retrospective study was conducted in which 100 patients were collected from different hospitals in Iraq after obtaining all the necessary approvals required for this study.

Study Design

This study was based on a retrospective analysis, where 100 patients were collected for Aneurysms. A comparison was made with the Unruptured group Aneurysms, which 50 included, information and demographic data were obtained, which included the type of disease present and family history, in addition to endovascular treatment.

As for Hunt and Hess to predict mortality based on clinical features of the patient group, Aneurysm Characteristics were also identified, which included size, shape, and location

Study Period

The duration of study days includes a full year, which included the collection of information and demographic data, and it was a period from 5-5-2020 to 19-6-2021

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Aim of Study

This study aimed to Potential predictive factors in assessing and knowing the complications of patients with intracranial aneurysms.

Results

Table 1- distribution of patient according to age

Classification	N	P%	CHI-SQUARE
40-44	20	20%	4.32
45-49	23	23%	
50-54	27	27%	
55-60	30	30%	

Table 2- distribution of Unruptured Aneurysms according to age

Classification	N	P%	CHI-SQUARE
40-44	15	30%	3.11
45-49	20	40%	
50-54	15	30%	

Table 3- distribution of patient according to sex

Classification	F	M
40-44	15	5
45-49	17	6
50-54	20	7
55-60	20	10

Table 4- distribution of Unruptured Aneurysms according sex

Classification	f	M
40-44	13	2
45-49	12	8
50-54	8	7

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Table5- demographic results of patient

	Patient	Unruptured Aneurysms
Endovascular treatment N (%)	50 (50)	24 (28)
DM N (%)	10 (10)	4 (8)
BMI (M±SD)	25.6 (4.6)	23.2 (3.3)
Hyperlipidemia N (%)	15 (15)	7 (14)
Systolic BP (mmHg) (M±SD)	122.33 ± 13.88	120.22 ± 13.98
Diastolic BP (mmHg) (M±SD)	76.22 ± 10.1	74.99 ± 10.2
Hypertension N (%)	51 (51%)	24 (48%)
Smoking N (%)	61 (61)	23 (46)
Familial history of stroke N (%)	11 (11%)	3 (6%)
Familial history of heart disease N (%)	15 (15%)	4 (8%)

Table 6- Hunt and Hess

N	GRADE	Frequency of patient
I	Asymptomatic, or minimal headache, nuchal rigidity	50
II	Moderate to severe headache, no neurological deficit except for cranial nerve palsy	20
III	Drowsiness, confusion, mild focal deficit	15
IV	Stupor, moderate to severe hemiparesis, early decerebrate posturing	8
V	Deep coma, decerebrate posturing, moribund	7

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Table 7- Location and size of Aneurysm

	patient		Unruptured Aneurysms	
	≤5 mm	>5mm	≤5 mm	>5mm
ICA	14	16	8	7
ACA	15	15	11	9
MCA	7	8	5	3
VBA	5	20	2	5

Table 8 – Complications of study

P	Ruptured Aneurysms	Unruptured Aneurysms	P value
Vasospasm.	51	6	0.001
Recurrent hemorrhage.	34	5	0.001
Seizures.	6	2	0.02
Hydrocephalus.	19	4	0.00
Hyponatremia.	22	4	0.001
Cardiac arrhythmia, myocardial infarction, or congestive heart failure.	18	3	0.0023
Neurogenic pulmonary edema, pneumonia, or atelectasis.	66	8	0.000
Gastrointestinal bleeding.	8	2	0.034

Discussion

This study was divided into two groups: patients and the control group, and the time group consisted of 100 patients. As for the control group, it was 50, where the patients were divided into four groups, and the most frequent group was from 55 to 60 years old for 30 patients, and came in the second category From 50 to 54 years for 27 patients and the chi-square was 4.32

As for the ages of the control group, the most frequent group was from 45 to 49 years old, with 20 patients (27%) as shown in tables one and two.

In Table 3, we note the distribution of patients by gender, and the percentage of female patients was more than males, as it was 72%, while for males it was 28%, and the same was the case for the control group, and female patients were more than the male group

In Table 5, a comparison was made between the group Ruptured Aneurysms and Unruptured Aneurysm, where we note that the indicator of body mass, endovascular treatment, and the presence of diseases was more prevalent in the group Ruptured Aneurysms As for family history, it was present in 11% of patients

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in Table 6, which shows Hunt and Hess were found 50 patients from level 1 and 20 patients from level 2, and 15 patients from level 3

Classification of aneurysms according to the artery on which they are located on the anterior cerebral - anterior communicating arteries which found in our study with 30 patients in G1 and 20 in Unruptured Aneurysms or may be located in on the internal carotid artery 30 patients for G1 and 14 Unruptured Aneurysms and were found locater on the middle cerebral artery 15 patient in G1 and 8 in Unruptured Aneurysms and in last came VBA was found in our study with 25 patients in G1 and 7 in G2 as shown in figure 7

Aneurysms of the internal carotid artery are characterized by headache localization in the anterior or periorbital region; Visual disturbances may occur, paresis of the oculomotor nerve, hemiparesis, and rupture of the aneurysm of the anterior cerebral artery is often accompanied by mental changes (emotional weakness, psychotic disorders, decreased intelligence, memory impairment, concentration disorders,). There may be other disorders such as diabetes insipidus contralateral paraplegia [19,20]

The detection rate of NSAH in the first 12 hours after bleeding using computed tomography reaches 95.2%, within 48 hours - 80-87%, on days 3-5 - 75%, on days 6-21 - only 29%. A pronounced primary SAH is always prognostically unfavorable since, in almost all patients, it is accompanied by the development of vasospasm, which leads to the development of ischemia. The high information content of brain CT and, the prognostic significance of the results obtained, the speed of the study make this method mandatory when examining patients with cerebral aneurysms

The choice of treatment tactics is determined by the localization of the aneurysm, the presence or absence of the fact of its rupture, the time since bleeding, the clinical condition of the patient, the presence of complications.For patients with uninterrupted aneurysms, the timing of surgery is usually not of great importance since the probability of a ruptured aneurysm is 1-2% per year. It is important that the operation is performed in a vascular center with expertise in such operations, minimal death, disability, and complications.Patients with a ruptured aneurysm, Surgical treatment should be done in order to stop the aneurysm from the bloodstream as soon as possible, since the risk of bleeding again in the first two weeks of the aneurysm rupture is 15-25%.

Conclusion

Large aneurysms also increase the risk of bleeding. With an aneurysm of less than 5 mm, the risk of bleeding is 2.5% during life, rupture of an aneurysm with a size of 6-10 mm in 41% of cases, and a size of 11-15 mm, bleeding occurs in 87%. If the diameter of the aneurysm is greater than 15 mm, then the risk of bleeding decreases due to the formation of clots in its lumen.

The risk of death in case of re-rupture of the aneurysm during the first week after bleeding is 32%, in the second week - 43%, and during the year The first after bleeding, it reaches 63% (due to frequent bleeding, which, as a rule, is much more severe than the first).

As for the complications that occur in the acute period of an aneurysm rupture, they are recurrent bleeding from aneurysm and vasospasm, which occurs in 51% of cases in addition to presence of Seizures

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Recommendations

1. It is necessary to establish an adequate and confirmed criterion (theoretically and empirically) for aneurysm rupture, which can allow diagnosticians to identify an aneurysm that is prone to rupture and prescribe their treatment in a timely manner.
2. Treatment of a cerebral aneurysm depends on its size, location, symptoms, and the general condition of the patient
3. If symptoms characteristic of the disease begin to appear, immediate treatment is prescribed, regardless of the size of the intracranial aneurysm.

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