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Clinical Presentation Variants in Chronic Subdural Hematoma Patients in Al -Thawra Modern General Hospital in Sana'a City, Yemen

Prepared by:

Abdulhameed Mohammed Al_Bahwni

Abeer Mutahar Yahya Al_Hassani

Ahmed Ali Ahmed Al-Ghanemi

Ameen Qaid Mohammed Fara

Ezadeen Sharaf Ali Al-Selwi

Maram Hameed Al_Bahem

Mohammed Saeed Nasser Al_Salemi

Nader Mahmood Abdo Al_Selwi

Nisreen Nasr Mohammed Al_Masri

Omar Ali Hazam Al_Fareh

Shukri Bestam Ahmed Al_Shaibani

Supervisors:

Professor .Dr. Mojahed Measar

Professor of Neurosurgery

Dr. Ahmed Al_Shahethi

Assistant Professor of Community Medicine

Dr.Esmial Al_Hothi

Assistant Professor of Neurosurgery

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DEDICATION

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LIST OF ABBREVIATIONS

21 UMAS	**21 September University For Medical & Applied Sciences**
ACE	**Angiotensin Converting Enzyme**
BHC	**Burr Hole Craniotomy**
CNS	**Central Nervous System**
CSF	**Cerebrospinal Fluid**
CLD	**Chronic liver diseases**
CRF	**Chronic renal failure**
CSDH	**Chronic Subdural Hematoma**
CT	**Computed Tomography**
DM	**Diabetes mellitus**
FXIII	**Factor 13**
GCS	**Glasgow Coma Scale**
ICP	**Intracranial Pressure**
IHD	**Ischemic heart diseases**
LP	**Lumbar Puncture**
MRI	**Magnetic Resonance Image**
MMA	**Middle meningeal artery**
PNS	**Peripheral Nervous System**
SDE	**Subdural Effusion**
SDH	**Subdural Hematoma**
SPSS	**Statistical Package for the Social Sciences**
TDS	**Twist Drill Craniostomy**
TMGH	**Al_Thawra Modern General Hospital**

ABSTRACT

Background: Chronic subdural hematoma (CSDH) is a common condition encountered in neurosurgical practice usually affecting elderly population. Few studies have reported the characteristics of CSDH patients in the Middle Eastern population. This study aims to evaluate the various clinical presentation of patients with chronic subdural hematoma.

Methodology: A retrospective descriptive study that enrolled the data of 113 patients diagnosed with CSDH in Al-Thawra Modern General Hospital from January, 1 2017 to November, 30 2022. The data was collected from patient's archive files and analyzed with respect to spectrum of clinical presentation, GCS at admission, etiology, laterality of hematoma, co-morbidities, management and outcomes.

Results: The mean age of patients affected by CSDH was 61.8 years, and (77.9%) of patients were males. Most common presenting features were motor symptoms (79.6%), symptoms of increased ICP (54.0%) and disturbance level of consciousness (46.0%). The GCS at admission was 15 in (54%) of patients, 14-13 in (30.1%) of patients, 12-9 in (12.4%) of patients and less than 9 in (3.5%) of patients. The most reported co-morbidities with CSDH were HTN (25.7%) and bleeding tendency (12.4%).Bilateral CSDH was reported in (22.1%) of patients. 51 patients (45.1%) had no reported cause of their hematoma, while 34 patients (30.1%) had a history of fall down, and 19 patients (16.8%) had a history of RTA. BHC was carried out in (92.9%) of patients, and (96.5%) of patients have improved after management.

Conclusion: Most of patients affected by CSDH were elderly males. Motor symptoms were the most common presenting symptom, followed by symptoms of increased ICP and disturbance level of consciousness. HTN and bleeding tendency were the most common co-morbidities in patients affected by CSDH. Most of patients were managed by BHC, and the majority of patients showed improvement after the management.

Keywords: Clinical Presentation, Chronic Subdural Hematoma, Sana'a City, Yemen

CHAPTER 1 : INTRODUCTION

1.1 Background

Chronic subdural hematoma (CSDH), defined as an intracranial, extra-axial collection of blood lasting longer than 3 weeks, is a common form of intracranial hemorrhage. The incidence of CSDH increases with age, from 3.4 per 100 000 in people under 65 years of age to a reported range of 8–58.1 per 100 000 in people older than 65 years (Asghar, Adhiyaman, Greenway, Bhowmick, & Bates, 2002; Kostanian, Choi, Liker, Go, & Zee, 2000; Kudo & Kuwamura, 1992). This elevated incidence in older adults has been attributed to increased risk of falls and use of antithrombotic drugs (Kostanian et al., 2000). The trivial trauma and sometimes blunt trauma to the head predisposes its development. Brain atrophy in elderly leads to stretching of bridging veins that traverses the potential subdural space to drain the venous sinuses. These fragile veins are more susceptible to tear after trivial trauma and there after slow oozing into the space and subsequent osmotic expansion leads to increase volume of the subdural collection causing mass effect and clinical deterioration (Sah & Rawal, 2018).

The clinical presentation of CSDH is diverse, varying from mild symptoms, such as headaches and dizziness, up to severe symptoms, including hemiplegia and coma. CSDH can even result in death. Symptoms may differ with age. Young patients most often present with signs of increased intracranial pressure, such as progressive headache, nausea, and vomiting (Bartek Jr et al., 2019; Sousa et al., 2013). In older patients more than 65 years of age, cognitive and mental changes are more prevalent (Rainer Fogelholm, Heiskanen, & Waltimo, 1975; Ye, Kim, Kim, Cho, & Kim, 2008).

The diagnosis of a CSDH is not usually suspected at the time of initial presentation in majority of cases. The most important step in the diagnosis of CSDH is a high index of suspicion. It should be considered in any patient with or without a history of trauma presenting with a change in mental status or worsening of pre-existent neurological or psychological illness, focal neurological deficit, and, headache with or without focal neurological deficit. Computed tomography (CT) of the brain should be strongly considered in these patients to exclude a CSDH (K.-S. Lee, Bae, Bae, Doh, & Yun, 1997).

Treatment of CSDH is by surgical evacuation, although small hematomas may resolve spontaneously (Ohno et al., 1987). The commonly followed surgical procedures

include drainage by twist drill/burr hole craniostomy or craniotomy (Smely, Madlinger, & Scheremet, 1997).

Because the varying in the clinical presentations and the diagnosis of CSDH is not suspected at initial presentation in majority of the case, in this study we will focus in the variant presentations of CSDH and their related to the age of the patient.`

1.2 Problem Statement

Chronic subdural hematoma (CSDH) is a common condition encountered in neurosurgical practice usually affecting elderly population. The incidence of CSDH is increasing, likely due to the aging population with a 1-year mortality rate of up to 32% (Wang et al., 2019) .CSDH presents to clinical practice with a variety of non-specific presentations, and only few studies have reported the characteristics of CSDH patients in the Middle Eastern population including Yemen.

1.3 Significance of the Study

In Yemen, according to the available literature, there are no studies or researches that have been published concerning the clinical presentation variants in chronic subdural hematoma patients. This lack of information underlined the need for conducting this study and stress its importance. So we believe that carrying out this study will contribute to filling the knowledge gap related to the clinical presentation variants in chronic subdural hematoma patients in Yemen.

1.4 Research Question:

1. What are the clinical presentation variants in chronic subdural hematoma patients in Al-Thawra Modern General Hospital in Sana'a city, Yemen?
2. What is the most common presentation of chronic subdural hematoma?
3. Is there a difference in patients' presentation related to the age?

1.5 Hypothesis

Chronic subdural hematoma has variant clinical presentations depending on age of the patients and the presence of concomitant chronic disease.

1.6 Objectives

1.6.1 General Objective

The aim of the study is to assess the variant and common presentations in CSDH patients at Al-Thawra Modern General Hospital (TMGH).

1.6.2 Specific Objectives

- To describe the characteristic of respondents according to socio-demographic variables.
- To identify the variant of clinical presentations in CSDH patients
- To identify the most common presentation of CSDH.
- To determine the chronic diseases among CSDH patients
- To identify the difference in patients' presentation depending on independent factors.

CHAPTER 2 : LITERATURE REVIEW

2.1 Review of Chronic Subdural Hematoma

Chronic subdural hematoma (CSDH) is an encapsulated collection of old blood, mostly or totally liquefied and located between the dura mater and arachnoid. It was first described by Virchow in 1857 as “pachymeningitis hemorrhagic interna”. Later Trotter put forward the theory of trauma to the bridging veins as a cause of what he named “subdural hemorrhagic cyst”. Since then, trauma has been recognized as an important factor in the development of CSDH. CSDHs often occur in the elderly after a trivial injury without any damage to the underlying brain and usually there is a period of weeks to months before it becomes clinically evident (Tsai, Lieu, Hwang, Huang, & Hwang, 2010).

2.2 Epidemiology of Chronic Subdural Hematoma

Chronic Subdural hematoma has a peak incidence in the sixth and seventh decade of life (Tsai et al., 2010).Fogelholm and Waltimo estimated an incidence of 1.72/100 000 per year, the incidence increasing steeply with advancing age up to 7.35/100 000 per year in the age group 70–79 (R Fogelholm & Waltimo, 1975). This incidence is expected to rise further due to the continuing growth of the older population.

2.3 Risk Factors of Chronic Subdural Hematoma

It has long been recognized that the elderly are more likely to develop subdural hematoma, particularly from minor trauma. Generalized cerebral atrophy and increased venous fragility associated with aging are the major predisposing factors. With aging, the mass of the brain decreases leading to an increase in the space between the brain and the skull from 6% to 11% of the total intracranial space. This causes stretching of the bridging veins and the greater movement of the brain within the cranium makes these veins vulnerable to trauma (Gupta, 2022; Traynelis, 1991).

Trauma is an important factor in the development of CSDH. However, a history of head injury (direct trauma) is absent in about 30%–50% of the cases. Indirect trauma seems to be more important. About half the patients have a history of fall but without hitting their head on the ground (FELDMAN, PINCUS, & McENTEE, 1963; Rozzelle, Wofford, & Branch, 1995). In many situations the trauma is so trivial that it is forgotten. Other

predisposing factors include anticoagulation, alcoholism, and epilepsy, bleeding diathesis, low intracranial pressure secondary to dehydration or after the removal of cerebrospinal fluid, and receiving renal dialysis, presumably due to platelet dysfunction (Traynelis, 1991). As many as 24% of patients with CSDH are on warfarin or an antiplatelet drug (Jones & Kafetz, 1999) ; 5%–10% have a history of alcoholism and epilepsy.

2.4 Etiology of Chronic Subdural Hematoma

Although majority of the CSDHs are due to trauma, intracranial hypotension and defective coagulations could also be responsible.

2.5 Post-Trauma

Definite history of trauma could be obtained in majority of the cases. Majority of these cases have mild head injury, although moderate to severe injury could be the causative factor in some cases. This injury could be trivial and may go unnoticed. Some cases could occur after neurosurgical operations. The thin walls of bridging veins, circumferential arrangement of collagen fibers, and a lack of outer reinforcement by arachnoid trabecules contribute to the more fragile nature of bridging vein in the subdural portion as compared to the subarachnoid portion. Repeated injury on the head during play may be the cause of CSDH in children.

CSDH can evolve from acute SDH or subdural effusion (SDE) (S.-H. Park et al., 2008). Matrix metalloproteinase is thought to play a role in the development of CSDH. About half of the asymptomatic traumatic SDE ultimately evolve into CSDHs. Rupture of bridging veins, bleeding from the hygroma wall due to new capillaries, vascular hyperpermeability, increased fibrinolysis, and increasing protein content in the hygroma are some of the explanations of the pathogenesis of traumatic SDE evolving into CSDH. Inflammatory cytokines are elevated in SDE and CSDH, as compared with peripheral venous blood. It is hypothesized that SDE and CSDH are different stages, with different appearances, of the same inflammatory reaction (Feng, Jiang, Bao, Liang, & Pan, 2008).

2.5.1 Intracranial Hypotension

The cerebrospinal fluid (CSF) leakage could cause intracranial hypotension which could lead to CSDH formation.

2.5.2 Spontaneous Intracranial Hypotension

Spontaneous intracranial hypotension could be the cause of CSDH, especially in young to middle-aged patients, without preceding trauma or hematological disorders. MRI scans of the spine and radionuclide cisternography are useful in the evaluation of intracranial hypotension(Takahashi et al., 2007). The presence of an underlying spontaneous spinal CSF leak should be considered in CSDH, even among the elderly taking anticoagulants.

2.5.3 CSF Rhinorrhea

CSF rhinorrhea could be the cause of the intracranial hypotension leading to CSDH(Poonnoose, Manjooran, Mathew, & Ramachandran, 2007).

2.5.4 Intracranial Hypotension Following Lumbar Puncture, Spinal Anesthesia, and Spine Surgery

The possibility of an intracranial SDH as a complication of puncture of the dura mater should be suspected, especially in post lumber puncture (LP) headache of more than 1 week. Neuroimaging is necessary after 1 week of LP if the patient continues to have headache. CSDH should be considered when postpartum patients, who have received epidural anesthesia, present with mild to severe, persistent, and non-postural headache(Fujii et al., 2010) (Tekin, Colak, Kutlay, & Demircan, 2012).CSDH could occur after microdiscectomy complicated by delayed CSF leak.

2.5.5 Intracranial Hypotension Due to the Sudden Decompression of Intracranial Lesion

CSDH can develop due to intracranial hypotension secondary to sudden decompression of intracranial pathologies, such as suprasellar arachnoid cyst fenestration and endoscopic third ventriculostomy (Tekin et al., 2012).

2.5.6 Coagulopathy, Anticoagulants, and Antiplatelet Drugs

CSDH could develop in the presence of potential hemorrhagic diathesis due to the deficiency of clotting factors. Factor XIII (FXIII) deficiency may play a pathophysiological role in spontaneous CSDH. FXIII activity should be investigated because it may predict rebleeding events after treatment. FXIII substitution may prevent recurrence in individuals

with considerably low FXIII activity (Bosche et al., 2013). CSDH could develop in patients receiving antiplatelet and anticoagulation therapy (Vuk et al., 2010) .

2.6 Pathophysiology of Chronic Subdural Hematoma

The initial trauma to the bridging veins results in hemorrhage into the subdural space. A day after the hemorrhage, the outer surface of the hematoma is covered by a thin layer of fibrin and fibroblasts. Migration and proliferation of the fibroblasts leads to formation of a membrane over the clot by the fourth day. The outer membrane progressively enlarges and the fibroblasts invade the hematoma and form a thin membrane during the next two weeks (Munro & Merritt, 1936). Liquefaction of the hematoma occurs due to the presence of phagocytes. Then the hematoma may either resorb spontaneously or slowly increase in size resulting in a CSDH. Two major theories have been proposed to explain the growth of a CSDH—namely, the osmotic theory and the theory of recurrent bleeding from the hematoma capsule.

Osmotic theory was based on the hypothesis that the liquefaction of the hematoma increases the protein content and oncotic pressure in the encapsulated fluid. This attracts fluid from the neighboring vessels into the cavity due to osmotic pressure gradient across the semipermeable membrane (hematoma capsule)(Gardner, 1932) .However this theory was disproved by weir, who demonstrated that the osmolality of the hematoma fluid was identical to that of blood and CSF (Labadie & Glover, 1976).

Recurrent bleeding from the hematoma capsule is the proved and more widely accepted theory. The hematoma capsule has been shown to have abnormal and dilated blood vessels, the source of hemorrhage (Sato & Suzuki, 1975). This theory was supported by the study done by ito et al. They administered 51cr-labelled red cells intravenously six to 24 hours before the evacuation of hematoma and demonstrated that it contained 0.2%–28% of fresh blood (Ito, Yamamoto, Saito, Ikeda, & Hisada, 1987). Also increased fibrinolytic activity and coagulation abnormalities have been demonstrated within the CSDH. This may also play a part in the expansion of CSDH (Traynelis, 1991). The intracranial pressure is usually normal or only slightly increased. The atrophied brain and lack of tamponading effect contributes to the gradual expansion of CSDH. The nature of the subdural collection may vary between watery, altered blood and fresh blood clots, depending on the age of the CSDH and the frequency of recurrent hemorrhages. Onset of symptoms may be delayed by

weeks or even months. Because of many ways in which CSDH can present, it has been described "the greater neurological imitator"(HOWARD & HEALTHCARE CENTER) .

2.7 Clinical Picture of Chronic Subdural Hematoma

2.7.1 History Findings

Depends on the size and location of the hematoma and the length of time since the inciting event. So in CSDH symptoms onset is insidious and ≥ 3 weeks after the inciting event. Typically gradual in course (Adhiyaman, Asghar, Ganeshram, & Bhowmick, 2002; R. J. Meagher & W. J. e. N. Young, 2009) .

1. Altered mental state that can progress to coma, characterized by: Confusion, Delirium and excessive drowsiness.
2. Recurrent headaches but it's more common in younger patients than the elderly, likely because of cerebral atrophy and larger available intracranial space in the elderly.
3. Cognitive deficits like impaired memory and Dementia (Sahyouni, Goshtasbi, Mahmoodi, Tran, & Chen, 2017).
4. Focal neurological signs like incontinence and contralateral hemiparesis (most common) that can progress to hemiplegia.
5. Ataxia and recurrent falls.
6. Changes in personality (Alvarez-Pinzon, Valerio, Barkley, Swedberg, & Wolf, 2017)
7. Aphasia.
8. Seizures (rare).

2.7.2 Neurological Examination

Chronic subdural hematoma may demonstrate anyone of the following: mental status changes, papilledema, hyperreflexia or reflex asymmetry, hemianopsia, hemiparesis and third or sixth cranial nerve dysfunction. Such findings may also be associated with other entities. In patients aged 60 years or older, hemiparesis and reflex asymmetry are common presenting signs.

2.8 Investigation and Evaluation of Chronic Subdural Hematoma

2.8.1 Laboratory Studies:

Initial blood tests include the following: complete blood count, hemoglobin or hematocrit, coagulation profile, basic metabolic panel, type and screen/cross-match. In addition, drug and alcohol screenings may be important for correlating the neurologic examination with the imaging studies (R. J. Meagher & W. Young, 2009)

2.8.2 Imaging Studies

A- Head Computerized Tomography (CT)

In the chronic phase, the lesion becomes hypodense and is easy to appreciate on a noncontrast head CT scan. About 20% of chronic subdural hematomas are bilateral. Often, a chronic subdural hematoma appears as a heterogeneously dense lesion indicative of recurrent bleeding with a fluid level between the acute (hyperdense) and chronic (hypodense) components of the hematoma (Kligerman et al., 2021)

B- Head Magnetic Resonance Imaging (MRI)

An MRI is helpful in imaging chronic subdural hematoma when CT scans are difficult to interpret (eg, when suspecting an isodense hematoma). MRI may be particularly helpful in diagnosing bilateral chronic subdural hematoma because a midline shift may not be apparent on CT scan (S.-H. Lee et al., 2018)

2.8.3 Histological Findings:

Fibroblastic membranes form on the dural side and arachnoid side of the chronic subdural hematomas, with the dural neomembrane being more vascular. The neomembrane consists of many capillaries, intact and lysed erythrocytes, hemosiderin-laden macrophages, and granulation tissue (R. J. Meagher & W. Young, 2009).

2.9 Treatment and Outcomes of Chronic Subdural Hematoma

The treatment has improved dramatically in recent years because of advances in diagnosis and surgical techniques. However, there is still some debate regarding the best strategy for treatment. There are numerous modifications or alternative methods to reduce the recurrence rate (Ducruet et al., 2012; Xu et al., 2017)

2.9.1 Non-Surgical Treatments:

In 1920s, lumbar puncture was the only definite non-operative treatment that had been recommended (Putnam & Cushing, 1925).There were some reports that nonsurgical treatment with bed rest, steroids, mannitol, or a combination were successful. Successful management was also reported with some drugs inhibiting bleeding or inflammation such as angiotensin converting enzyme inhibiter, atorvastatin, and tranexamic acid. Stopping the anti-coagulants or radiation was also effective to resolve the hematoma. Nonsurgical treatment was successful for patients with age greater than 70 years, decreased cognitive level, brain atrophy, and absence of increase of intracranial pressure. Favorable factors for conservative treatment were female sex, lesser midline shift, lesser thickness of the hematoma, and lesser attenuation values on CT scan. However, it is unclear whether the resolution really result from the drug effect or natural course. Furthermore, nonsurgical treatment frequently requires close observation with repeated CT scans for a long time, average 40 days (Ratre, Yadav, Choudhary, & Parihar, 2015; Thotakura & Marabathina, 2015) .

2.9.2 Surgical Treatments

Not all patients with CSDH require surgery. In general, the decision of operation is based on the presence of symptoms and clinical or imaging signs of cerebral compression.

The most commonly used surgical methods are TD "twist dril" craniostomy, BH "burr-hole" trephination, and craniotomy. They have their own advantages and disadvantages. Openings of the skull up to a diameter of 5 mm were categorised as TD craniostomy, openings of up to 30 mm as BH craniostomy, and larger openings as craniotomy.There was a report that one BH only was associated with a significantly higher recurrence rate, longer hospital stay and higher infection rate. A meta-analysis suggested that single BH is as good as double BHs (Baschera, Tosic, Westermann, Oberle, & Alfieri, 2018; Weigel, Schmiedek, & Krauss, 2003).

2.9.3 Alternative Methods

Subdural tapping is useful for infants. And mini-craniotomy, the diameter of the bone flap remains limited to 3–4 cm, may have superior visualization, while the invasiveness and complication rate are equal to those of BH. Subduroperitoneal shunts, though rarely used, may be a viable option in the treatment of CSDH, especially in refractory cases. Recently

embolization of the middle meningeal artery (EMMA) with or without trephination was reported as an effective method. Although EMMA interrupts the blood supply to the outer membrane and thus prevents hematoma enlargement, it often fails to prevent recurrences (Link, Schwarz, Paine, Kamel, & Knopman, 2018; Van Der Veken et al., 2014).

2.9.4 Algorithmic Management:

Up to date, trephination either by BH or TD is the treatment of choice for symptomatic patients. Craniotomy should be reserved only for symptomatic organized or solid hematomas. For the recurrent CSDHs, if the risk of recurrence is low, still repeated trephination is simple and effective. If the risk of recurrence is high, additional management such as EMMA may reduce the chance of recurrence. Oslo grading system, seems to be very useful to predict the risk of recurrence. For the refractory CSDHs, it is necessary to obliterate the subdural space by lumbar or ventricular injection, fibrin glue injection or reducing the dura. Subduroperitoneal shunts can be the last choice for refractory CSDHs.

2.9.5 Complications of Chronic Subdural Hematoma

Among patients with chronic SDH who underwent surgical drainage, 5.4-19% experience medical or surgical complications. Medical complications, including seizures, pneumonia, empyema, and other infections, occur in 16.9% of cases. Surgical complications, including acute subdural collection formation, intraparenchymal hematoma, or tension pneumocephalus, occur in 2.3% of cases. Following surgery for chronic SDH, even with normalization of ICP, a persistent space may exist between the brain and dura. Reoperation rates for reaccumulation of hematoma have been reported. Postoperative seizures have been reported in 3-10% of patients. Whether prophylactic anticonvulsant therapy can decrease this risk is debatable. Subdural empyema, brain abscess, and meningitis have been reported to occur in less than 1% of patients after operative drainage of a chronic SDH. In these patients, numerous potential complications are also related to anesthesia, hospitalization, patient age, and concurrent medical conditions(Rauhala et al., 2020; Shaikh et al., 2010) .

CHAPTER 3 : METHODOLOGY

3.1 Design of Study

The study is a retrospective descriptive study to extract patients' data from files of 113 patients who were diagnosed with chronic subdural hematoma in Al-Thawra Modern General Hospital in Sana'a city, Yemen during the period from January 1, 2017 to November 30, 2022.

3.2 Study Setting

The setting of this study is the neurosurgical department and archive department in Al-Thawra Modern General Hospital in Sana'a city, Yemen.

3.3 Study Population

Study population is patients who had chronic subdural hematoma and are eligible for the study by meeting the inclusion criteria. The study was conducted from January, 1 2017 to November, 30 2022 in Al-Thawra Modern General Hospital in Sana'a city, Yemen.

3.4 Sample Size

The study sample is all archive files of patients who had chronic subdural hematoma and meet the inclusion criteria in the period from January, 1 2017 to November, 30 2022.

3.5 Data Collection Tools and Techniques

The data was collected by the researchers was checked to be complete and was insured that incomplete questioners were excluded. The hard copies of the questionnaires were kept safe with the researchers.

A printed structured questionnaire was used to collect data, which included the following sections:

- **First section**: Demographic factors including patients' name, age, gender, date of admission and file number.

- **Second section:** clinical presentation including consciousness level, motor symptoms, gait disturbance, speech, sphincter incontinence, ICP symptoms, sensory symptoms and others symptoms.
- **Third section:** etiology including trauma, post any brain operation and recurrent CSDH and undocumented
- **Fourth section:** chronic diseases including HTN , DM ,IHD,CLD,CRF, heart diseases, epilepsy and others
- **Fifth section:** Hematoma specific variables including hematoma site **,** GCS at admission, management and outcomes

3.6 Inclusion and Exclusion Criteria

3.6.1 Inclusion Criteria

Patients who had chronic subdural hematoma and were admitted to Al-Thawra Modern General Hospital (TMGH), Sana'a city, Yemen during the period from January 2017 to November 2022 .

3.6.2 Exclusion Criteria

Patient with acute subdural hematoma, spinal subdural hematoma, diffuse axonal injury, brain contusion and epidural hematoma were excluded.

3.7 Statistical Analysis

Data was analyzed by using IBM Statistical Package for the Social Sciences (SPSS) v25.0. Descriptive statistics was used to describe participants' demographic characteristics. Continuous data was reported as mean ± SD for normally distributed variables. Categorical data was reported as frequencies and percentages.

To measure the associations between two qualitative variables proportion was used to summarize the data, and the difference of the proportions in the subgroups was determined and subjected to the tests of significance (Chi-square, $P< 0.05$ as statistically significant).

3.8 Ethical Considerations

Approval was obtained from 21September University for Medical and Applied Sciences (21UMAS), from community medicine department in 21September University of

Medical and Applied Sciences (21UMAS) and from Al_Thawra Modern General Hospital (TMGH). The study was conducted under the current ethical guidelines for retrospective studies. The study was conducted in Al_Thawra Modern General Hospital and the researchers undertake to maintain the personal data as strictly confidential and to use anonymized data to the extent feasible.

CHAPTER 4 :RESULTS

4.1 Demographic Data

4.1.1 Gender

The table 4.1 shows that most of the patients in the research who are affected by chronic subdural hematoma are males, as their number reached 88 (77.9%), while the number of females reached 25 (22.1%).

Table 4.1: Distribution of Study Sample by Gender

Gender	Frequency	Percent
Female	25	22.1
Male	88	77.9
Total	113	100.0

4.1.2Age Groups

The table 4.2 shows that patients' ages in age groups were as follow: 68 patients (60.2%) were older than 60 years, 26 patients (23%) were between 41-60 years, 13 patients (11.5%) between 41‧60 years and 6 patients (5.3%) were younger than 20 years. The mean age was (61.8) years.

Table 4.2: Distribution of Study Sample by Age Group

Age Group	Frequency	Percent	Mean (SD)
< 20	6	5.3	61.8 (20.16)
20-40	13	11.5	
41-60	26	23.0	
> 60	68	60.2	
Total	113	100.0	

4.1.3 Year of Admission

The figure 4.1 shows that the highest year of admission was 2022, with (23%), while the lowest year of admission was in 2019, with only (8%) of the sample was admitted.

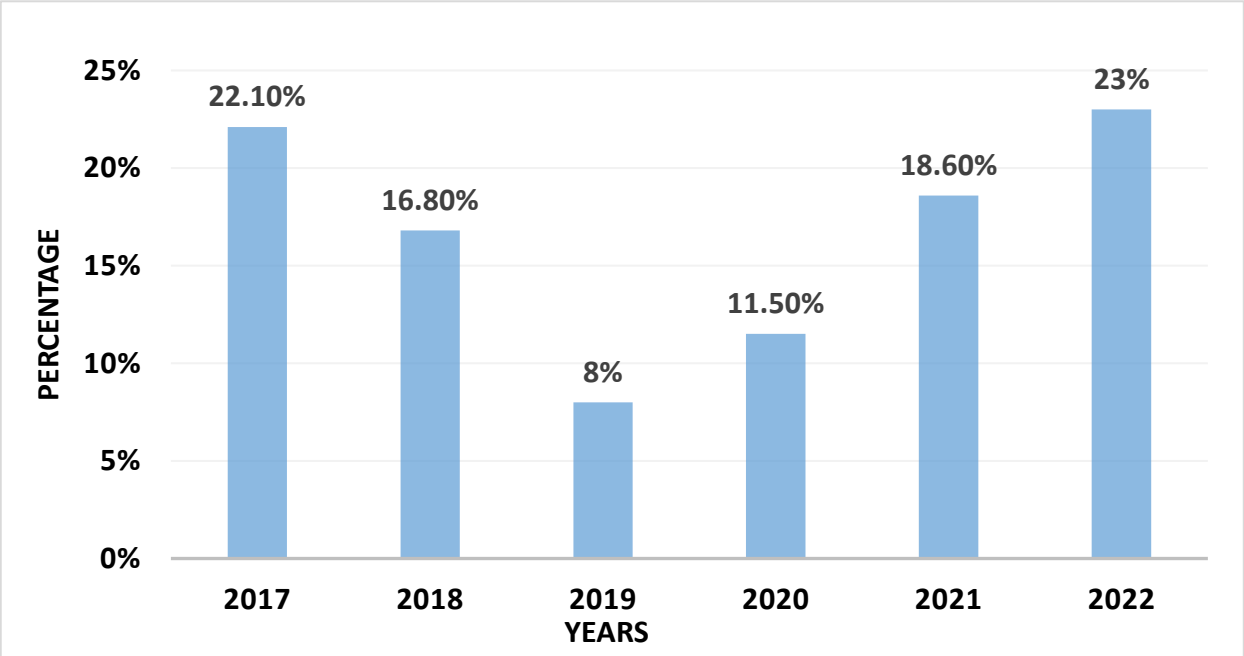

Figure 4.1: Year of Admission for Patients Affected by Chronic Subdural Hematoma

4.2 Clinical Presentation

4.2.1 Consciousness Level

The table 4.3 shows that most of the patients with chronic subdural hematoma had a normal level of consciousness, as their number reached 61 (54.0%), followed by the patients who were confused , as their number reached 34 (30.1%), and the least had a loss of consciousness, as their number reached 18 (15.9%)

Table 4.3: Level of Consciousness in Patients Affected by Chronic Subdural Hematoma

Consciousness Level	Frequency	Percent
Confused	34	30.1
Loss of consciousness	18	15.9
Normal	61	54.0
Total	113	100.0

4.2.2 Motor Symptoms

The table 4.4 shows that the distribution of motor symptoms of patients with chronic subdural hematoma was 43 (38.1%) had right limbs weakness, 32 (28.3%) had left limbs weakness, 8 (7.1%) had both limb weakness , 3 (2.7%) had right limbs paralysis ,2 (1.8%)had left limbs paralysis , 2 (1.8%) had both limbs paralysis and 23 were (20.4%) normal.

Table 4.4: Distribution of Study Sample by Motor symptoms

Motor Symptoms	Frequency	Percent
Both limbs paralysis	2	1.8
Both limbs weakness	8	7.1
Left limbs paralysis	2	1.8
Left limbs weakness	32	28.3
Right limbs paralysis	3	2.7
Right limbs weakness	43	38.1
Normal	23	20.4
Total	113	100.0

4.2.3 Gait Disturbance (Ataxia)

The figure (4.2) shows that most of the patients who are affected by chronic subdural hematoma did not have gait disturbance, as their number reached 110 (97.3%), and the least had gait disturbance, as their number reached 3 (2.7%)

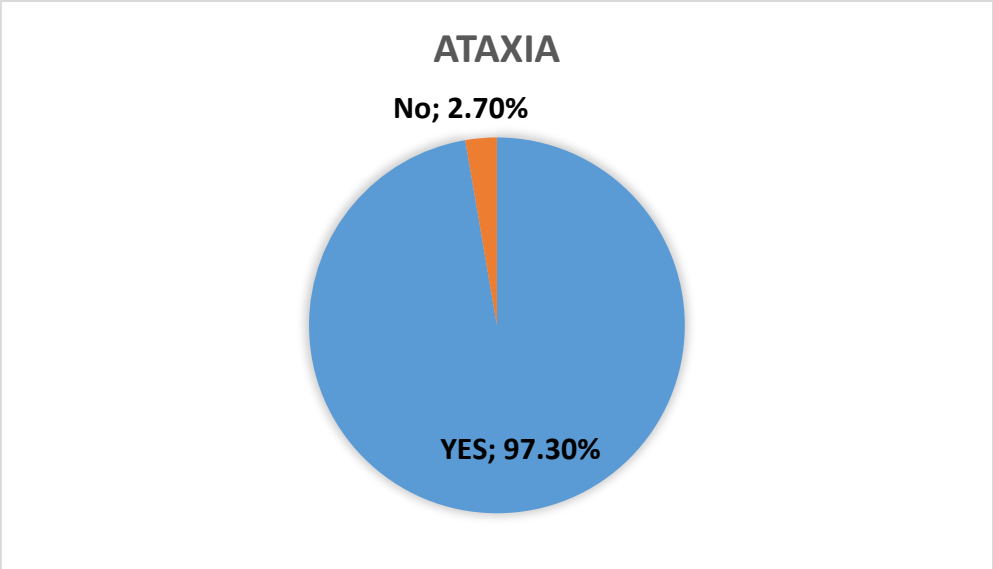

Figure 4.2: Gait Disturbance in Patient Affected by Chronic Subdural Hematoma

4.2.4 Speech

The figure shows that most of the patients who are affected by chronic subdural (4.3) hematoma have a normal state of speech, as their number reached (84) 74.3%, followed by people who have slurred speech (n: 23) 20.4%, while the least have aphasia, as their number reached (6) 5.3%

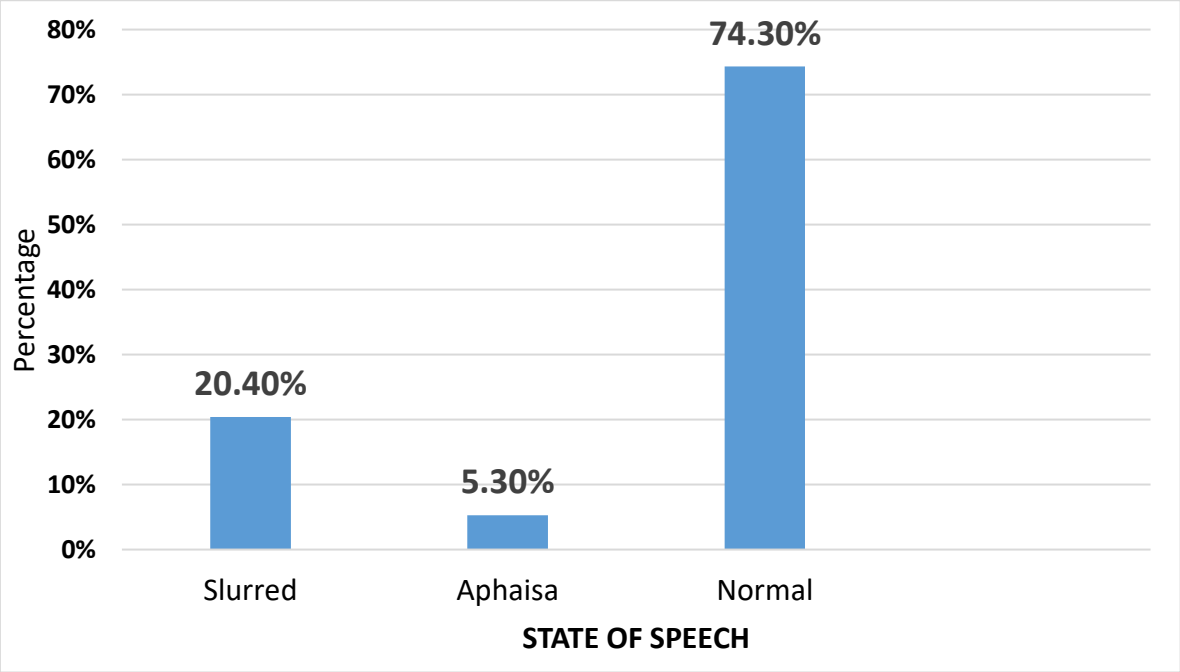

Figure 4.3: State of Speech in Patient Affected by Chronic Subdural Hematoma

4.2.5 Sphincter Incontinence

Table 4.5 shows that most of patient who were affected by chronic subdural hematoma have normal sphincter control, as their number reached 96 (85%), while those who had urinary incontinence, were 9 (8.0%), 2 (1.8%) patients had stool incontinence , and 6 (5.3%) patients had both stool and urinary incontinence

Table 4.5: Distribution of Study Sample by Sphincter Control

Sphincter Incontinence	Frequency	Percent
Stool	2	1.8
Urine	9	8.0
Both	6	5.3
Normal	96	85.0
Total	113	100.0

4.2.6 ICP Symptoms

Figure 4.4 shows that more than half of the patients who are affected by chronic subdural hematoma have ICP symptoms, as their number reached (61) 54.0%, while (52)46.0% patients had no ICP symptoms. In patients, headache was the highest reported symptom as (59)52.2% patients complained of headache either alone or with other symptoms while (54) 47.8% had no headache as shown in figure (4.5). (5)4.4% patients complained of convulsion either alone or other symptoms while (108) 95.6% had no convulsion as shown in figure (4.6)

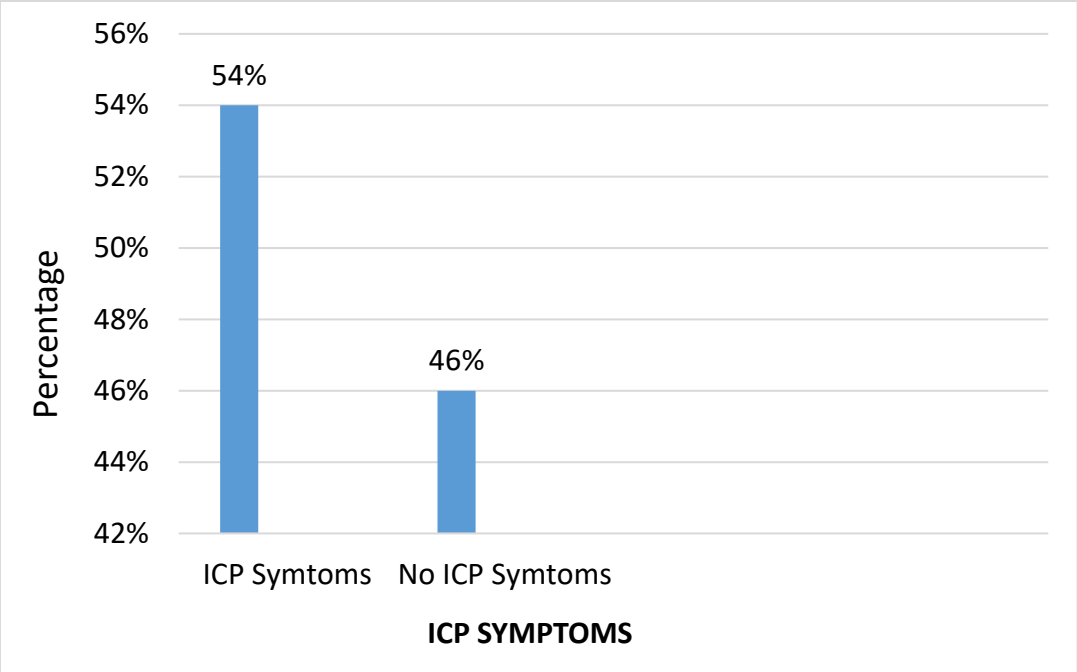

Figure 4.4: Frequency of ICP Symptoms in Patient Affected by Chronic Subdural Hematoma

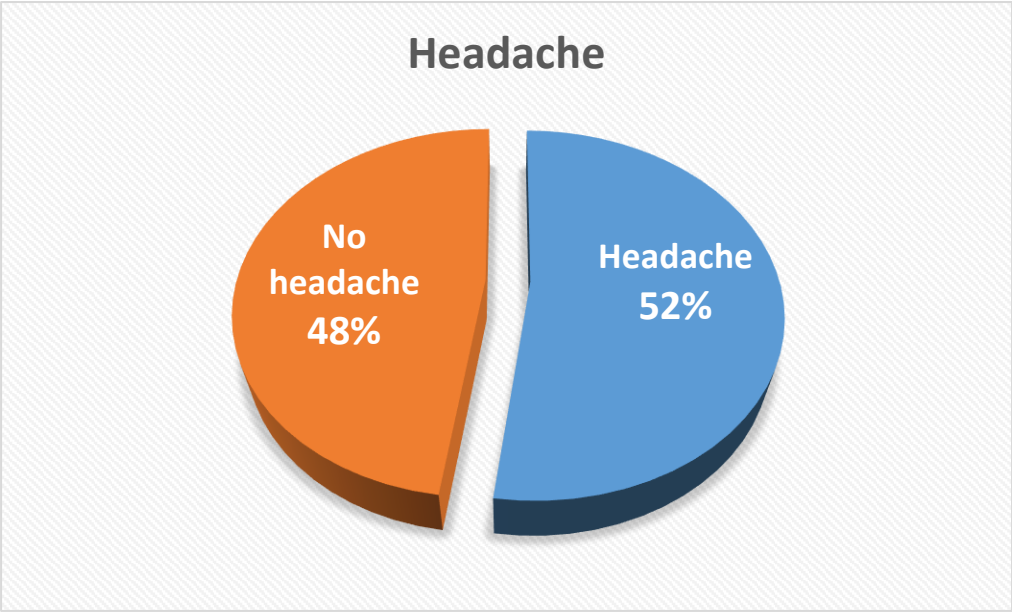

Figure 4.5: Frequency of Headache in Patient Affected by Chronic Subdural Hematoma

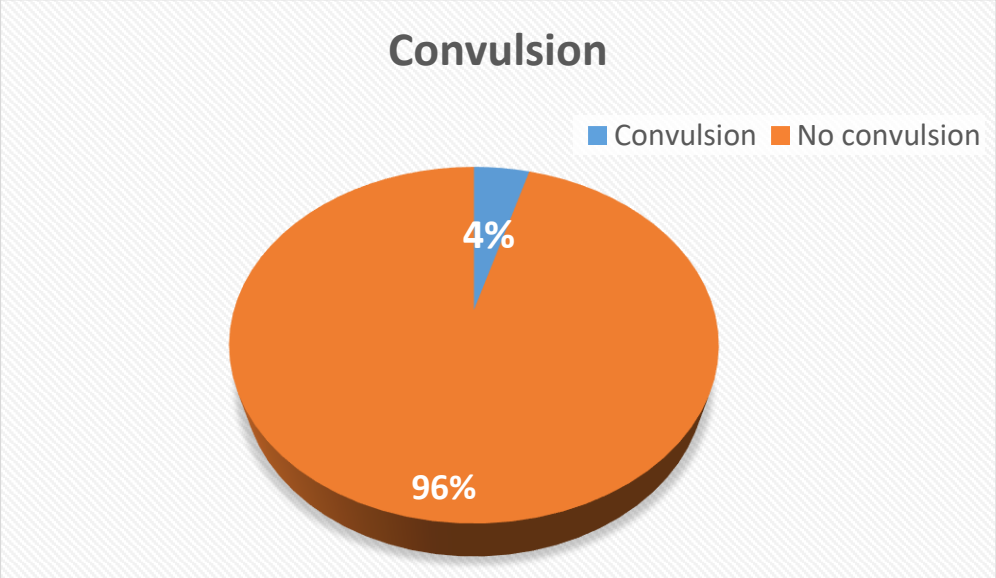

Figure 4.6: Frequency of Convulsion in Patient Affected by Chronic Subdural Hematoma

4.2.7 Sensory Symptoms

The table 4.6 shows that most of patients who are affected by chronic subdural hematoma have normal sensory system, as their number reached (108) 95.6%, followed by patients who have numbness (n:4) 3.5%, while there is only one patient who has a loss of sensation (Anesthesia) with 0.9%.

Table 4.6: Distribution of Study Sample by Sensory Symptoms

Sensory Symptoms	Frequency	Percent
Anesthesia	1	0.9
Numbness	4	3.5
Normal	108	95.6
Total	113	100.0

4.2.8 Other Symptoms

The table 4.7 shows that most of the patients who are affected by chronic subdural hematoma, 104 (92.0%) have no other symptoms, while only 9 patients have reported other symptoms .The distribution of other symptoms was as follows :(5) patients 4.4%, complained of dizziness, (2) patients 1.8% complained of hallucinations, followed by (1) 0.9% patient who had epistaxis and (1) 0.9% patient who had easy fatigability

Table 4.7: Distribution of study Sample by Other Symptoms

Other Symptoms	Frequency	Percent
Dizziness	5	4.4
Easy fatigability	1	0.9
Epistaxis	1	0.9
Hallucinations	2	1.8
no other symptoms	104	92.0
Total	113	100.0

4.2.9 Common Clinical Presentation:

As shown in figure 4.7 motor symptoms either in form of weakness or paralysis were the most common presenting symptoms with 79.6% of patients. Then, symptoms of increased ICP with 54.0% of patients, where 52.2% of patients have reported headache and only (4.4%) of patients complained of convulsions. (46.0%) of patients reported alteration in the level of consciousness with (15.9%) complained of total loss of consciousness. Frequencies of speech abnormalities, sphincter incontinence, other symptoms and sensory abnormalities were as fallowing (25.7%) (15.0 %) (10.0%) and (4.4%), respectively. The least documented symptom in our study was gait disturbance with (2.7%) of patients complained of

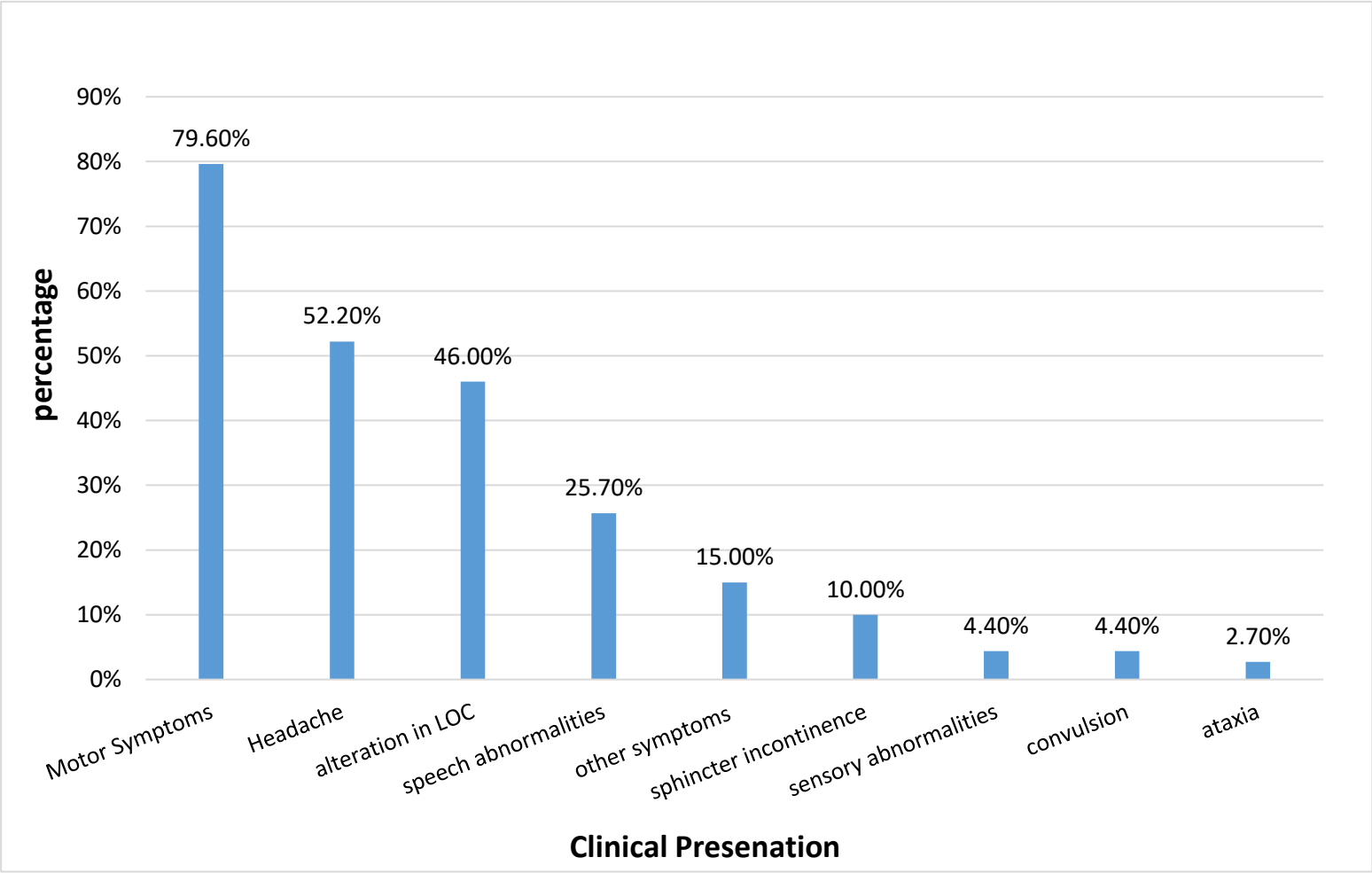

Figure 4.7: Frequencies of Clinical Presentation in Patients with Chronic Subdrual Hematoma

4.3 Chronic Diseases

The table 4.8 shows that the majority of the sample 68 (60.2%) do not have a chronic illness while 45(39.8%) have a known chronic illness. Those chronic include: HTN, bleeding tendency, asthma, CLD, CRF, heart disease, DM, IHD, rheumatoid arthritis and epilepsy. The frequency of each of these chronic diseases either alone or with another chronic disease is as follows as as shown in figure (4.8)

- 29 patients (25.7 %) have HTN while 84 (74.3%) patients do not.
- 14 patients (12.4 %) have bleeding tendency while 99 (87.6%) patients do not.
- 3 patients (2.7%) have asthma while 110 (97.3%) patients do not.
- 1 patient (0.9%) have CRF while 112 (99.1%) patients do not.
- 1 patient (0.9%) have CLD while 112 (99.1%) patients do not.
- 7 patients (0.9%) have heart disease while 106 (93.8%) patients do not.
- 1 patient (0.9%) have IHD while 112 (99.1%) patients do not.
- 4 patients (3.5%) have DM while 109 (96.5%) patients do not.
- 1 patient (0.9%) have rheumatoid arthritis while 112 (99.1%) patients do not.
- 1 patient (0.9%) have epilepsy while 112 (99.1%) patients do not.

Table 4.8: Frequency of the Chronic Diseases in Study Sample

Consciousness Level	Frequency	Percent
Asthma	3	2.7
Bleeding tendency	8	7.1
CLD, Bleeding tendency	1	0.9
CRF	1	0.9
Heart disease	1	0.9
Heart disease, Bleeding tendency	1	0.9
Heart disease, DM	1	0.9
Heart disease, HTN	2	1.8
Heart disease, HTN, Bleeding tendency	1	0.9
Heart disease, HTN, IHD	1	0.9
HTN	19	16.8
HTN, Bleeding tendency	2	1.8
HTN, DM	2	1.8
HTN, DM, Bleeding tendency	1	0.9
HTN, Rheumatoid arthritis and epilepsy	1	0.9
Unknown chronic illness	68	60.2
Total	113	100.0

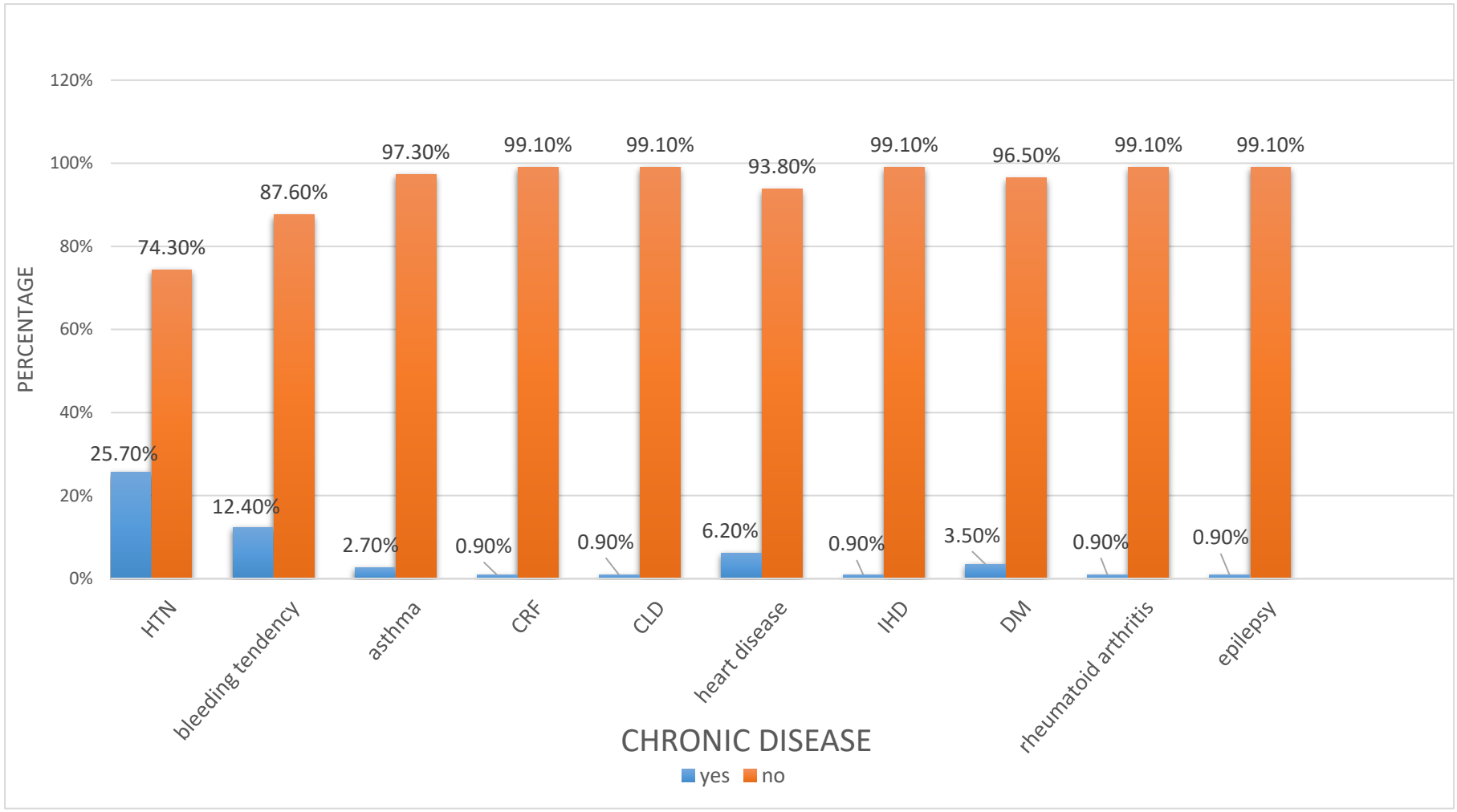

Figure 4.8 Frequency of Each Chronic Disease in Patients with Chronic Subdrual Hematoma

4.4 Etiology

Table 4.9 shows that those who did not have any recorded cause reached (45.1%), while the percentage of injuries for the after mentioned reasons was arranged as follows: post fall down, post RTA, recurrent CSDH, Post any brain operation (30.1, 16.8, 6.2,1.8 %)respectively .

Table 4.9: Frequency of Etiology in Study Sample

Etiology	Frequency	Percent
Post any brain operation	2	1.8
post fall down	34	30.1
post RTA	19	16.8
Recurrent CSDH	7	6.2
Undocumented	51	45.1
Total	113	100.0

Hematoma Specific Characteristics

4.5 Site of Hematoma

Table 4.10 shows that the hematoma site in most of patients with chronic subdural hematoma, was on the left side, with a number of (50) 44.2%, followed by the location on the right side (n: 38) 33.6%. , and the least with bilateral hematoma (n: 25) 22.1%

Table 4.10: Distribution of Sample by Site of Hematoma

Site of Hematoma	Frequency	Percent
Bilateral	25	22.1
Left	50	44.2
Right	38	33.6
Total	113	100.0
Bilateral	25	22.1

4.6 GCS at Admission

Table 4.11 shows that GCS at admission of patients distribution, was 15 in 61 patients (54.0%) , GCS between 14-13 in 34 patients (30.1 %) , between12-9 in 14 patients (12.4%) and <9 in 4 patients (3.5 %) .

Table 4.11: Distribution of Study Sample by GCS at Admission

GCS at Admission	Frequency	Percent
< 9	4	3.5
12-9	14	12.4
14-13	34	30.1
15	61	54.0
Total	113	100.0

4.7 Management

Figure (4.8) shows that most of chronic subdural hematoma patient were managed with surgical burr hole as their number reached 105 (92.9%), then by surgical craniotomy and conservative with a number of 6 (5.3%) and 2 (1.8%) respectively.

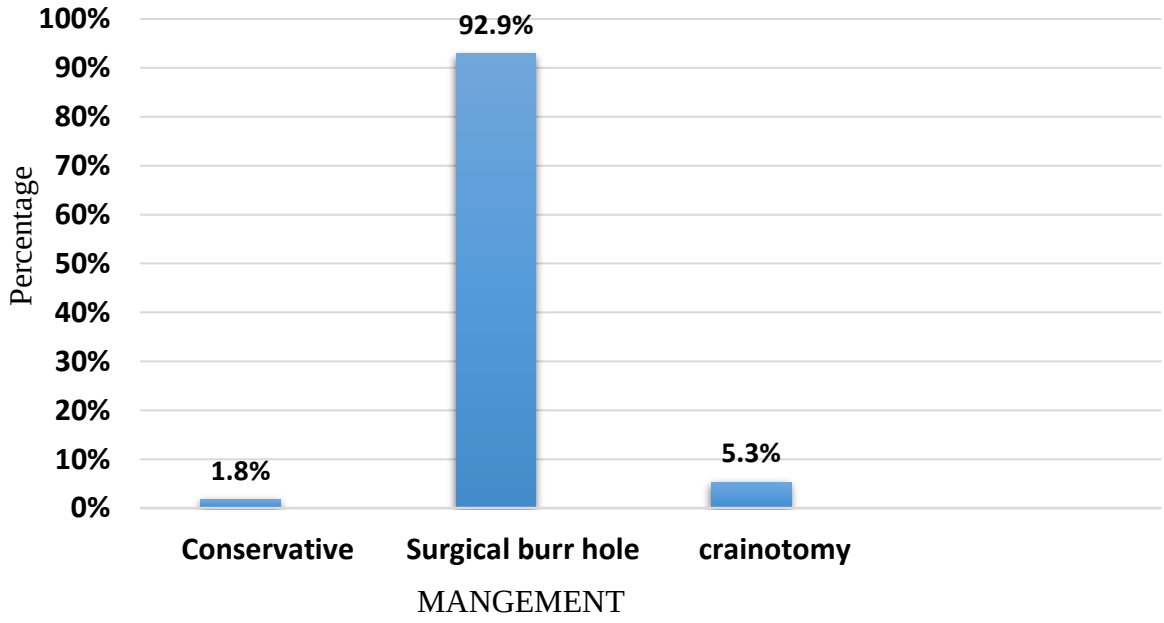

Figure 4.9 Method of Management in Chronic Subdural Hematoma Patients

4.8 Outcomes

The table 4.12 shows that most patients with chronic subdural hematoma were improving as their number reached 109 (96.5%), and only N: 4 (3.5%) died.

Table 4.12: Distribution of Study Sample by Outcomes

Outcome	Frequency	Percent
Death	4	3.5
Improve	109	96.5
Total	113	100.0

Table 4.13: Relationship between Clinical Presentation and Age Groups

clinical presentation			Age groups				Total	*P*.Value
			less than 20	20-40	41-60	more than 60		
Consciousness level	Confused	count	2	4	5	23	34	0.329
		% of Total	1.8%	3.5%	4.4%	20.4%	30.1%	
	Loss of consciousness	count	0	2	8	8	18	
		% of Total	0.0%	1.8%	7.1%	7.1%	15.9%	
	Normal	count	4	7	13	37	61	
		% of Total	3.5%	6.2%	11.5%	32.7%	54.0%	
Motor symptom	Both limbs paralysis	count	0	0	1	1	2	**0.009**
		% of Total	0.0%	0.0%	0.9%	0.9%	1.8%	
	Both limbs weakness	count	0	1	4	3	8	
		% of Total	0.0%	0.9%	3.5%	2.7%	7.1%	
	Left limbs paralysis	count	0	0	1	1	2	
		% of Total	0.0%	0.0%	0.9%	0.9%	1.8%	
	Left limbs weakness	count	0	1	5	26	32	
		% of Total	0.0%	0.9%	4.4%	23.0%	28.3%	
	Right limbs paralysis	count	0	1	1	1	3	
		% of Total	0.0%	0.9%	0.9%	0.9%	2.7%	
	Right limbs weakness	count	1	4	9	29	43	
		% of Total	0.9%	3.5%	8.0%	25.7%	38.1%	
	Normal	count	5	6	5	7	23	
		% of Total	4.4%	5.3%	4.4%	6.2%	20.4%	
Gait disturbance	No	count	5	13	25	67	110	0.143
		% of Total	4.4%	11.5%	22.1%	59.3%	97.3%	
	Yes	count	1	0	1	1	3	
		% of Total	0.9%	0.0%	0.9%	0.9%	2.7%	
Speech	Aphasia	count	1	0	1	4	6	0.619
		% of Total	0.9%	0.0%	0.9%	3.5%	5.3%	
	Slurred	count	0	2	5	16	23	
		% of Total	0.0%	1.8%	4.4%	14.2%	20.4%	
	Normal	count	5	11	20	48	84	
		% of Total	4.4%	9.7%	17.7%	42.5%	74.3%	
Sphincter Incontinence	Stool	count	0	0	0	2	2	0.507
		% of Total	0.0%	0.0%	0.0%	1.8%	1.8%	
	Urine	count	0	0	1	8	9	
		% of Total	0.0%	0.0%	0.9%	7.1%	8.0%	
	Both	count	0	0	3	3	6	
		% of Total	0.0%	0.0%	2.7%	2.7%	5.3%	
	Normal	count	6	13	22	55	96	
		% of Total	5.3%	11.5%	19.5%	48.7%	85.0%	
Headache	Headache	count	5	10	14	30	59	0.062
		% of Total	4.4%	8.8%	12.4%	26.5%	52.2%	
	No headache	count	1	3	12	38	54	
		% of Total	0.9%	2.7%	10.6%	33.6%	47.8%	
Convulsion	convulsion	count	0	3	0	2	5	**0.006**
		% of Total	0.0%	2.7%	0.0%	1.8%	4.4%	
	no convulsion	count	6	10	26	66	108	
		% of Total	5.3%	8.8%	23.0%	58.4%	95.6%	
Sensory symptoms	Anesthesia	count	0	0	0	1	1	0.952
		% of Total	0.0%	0.0%	0.0%	0.9%	0.9%	
	Numbness	count	0	1	1	2	4	
		% of Total	0.0%	0.9%	0.9%	1.8%	3.5%	

	normal	**count**	6	12	25	65	108	
		% of Total	5.3%	10.6%	22.1%	57.5%	95.6%	
Others symptoms	**Dizziness**	**count**	0	1	2	2	5	0.634
		% of Total	0.0%	0.9%	1.8%	1.8%	4.4%	
	Easy fatigability	**count**	0	0	1	0	1	
		% of Total	0.0%	0.0%	0.9%	0.0%	0.9%	
	Epistaxis	**count**	0	0	1	0	1	
		% of Total	0.0%	0.0%	0.9%	0.0%	0.9%	
	Hallucinations		0	0	0	2	2	
		% of Total	0.0%	0.0%	0.0%	1.8%	1.8%	
	No other symptoms		6	12	22	64	104	
		% of Total	5.3%	10.6%	19.5%	56.6%	92.0%	

The results of the test in table(4.13) showed that there were a statistically significant relation , between motor symptoms and age groups among the members of the study sample, as indicated by the value of probability p = (0.009), which is less than the level of significance (0.05). The test also shows a there was a statistically significant relation, between convulsion and age groups among the members of the study sample, as indicated by the value of probability p = (0.006), which is less than the level of significance (0.05). The results also showed that there were no statistically significant relation, between the consciousness level ,gait disturbance, speech, , sphincter incontinence , headache ,sensory symptoms and others symptoms and age groups among the members of the study sample, as indicated by the value of probabilities p = (0.329),(0.143) (0.619) (0.507) (0.062) (0.952) (0.634) respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non _significance.

Table 4.14: Relationship between Chronic Diseases and Age Groups

Chronic disease		Age Groups				Total	*P*.Value
		< 20	20-40	41-60	> 60		
HTN	HTN n (%)	0 (0.0%)	0 (0.0%)	9 (8.0%)	20(17.7%)	29 (25.7%)	**0.043**
	No HTN n (%)	6(5.3%)	13(11.5%)	17(15.0%)	48(42.5%)	84 (74.3%)	
Bleeding tendency	Bleeding tendency n (%)	0 (0.0%)	3 (2.7%)	2(1.8%)	9(8.0%)	14 (12.4%)	0.425
	No bleeding tendency n (%)	6(5.3%)	10 (8.8%)	24(3.5%)	59(5.2%)	99(87.6%)	
Asthma	Asthma n (%)	0(0.0%)	0 (0.0%)	0(0.0%)	3(2.7%)	3 (2.7%)	0.564
	No Asthma n (%)	6(5.3%)	13 (11.5%)	26(23.0%)	65(57.5%)	110 (97.3%)	
CRF	CRF n (%)	0 (0.0%)	1 (0.9%)	(0.0%)	(0.0%)	1 (0.9%)	0.051
	No CRF n (%)	6 (5.35)	12 (10.6%)	26(23.0%)	68(60.2%)	112 (99.1%)	
CLD	CLD n (%)	0(0.0%)	0(0.0%)	0(0.0%)	1(0.9%)	1(0.9%)	0.881
	No CLD n (%)	6(5.3%)	13(11.5%)	26 (23.0%)	67(59.3%)	112 (99.1%)	
Heart diseases	Heart diseases n (%)	1(0.9%)	0(0.0%)	0(0.0%)	6(5.3%)	7 (6.9%)	0.211
	No heart disease n (%)	5 (4.4%)	13(11.5%)	26 (23.0%)	62 (54.9%)	106 (93.8%)	
IHD	IHD n (%)	0(0.0%)	0 (0.0%)	0(0.0%)	1(0.9%)	1(0.9%)	0.881
	No IHD n (%)	6(5.3%)	13(11.5%)	26(23.0%)	67(59.3%)	112 (99.1%)	
DM	DM n (%)	0(0.0%)	0(0.0%)	2(1.8%)	2(1.8%)	4 (3.53%)	0.556
	No DM n (%)	6(5.3%)	13(11.5%)	24(3.5%)	66 (58.4%)	109 (96.5%)	
Rheumatoid arthritis	Rheumatoid arthritis n (%)	0(0.0%)	0(0.0%)	1(0.9%)	0(0.0%)	1(0.9%)	0.337
	No rheumatoid arthritis n (%)	6(5.3%)	13(11.5%)	25(22.1%)	68(60.2%)	112 (99.1%)	
Epilepsy	Epilepsy n (%)	0(0.0%)	0(0.0%)	1(0.9%)	0(0.0%)	1(0.9%)	0.337
	No epilepsy n (%)	6(5.3%)	13(11.5%)	25(22.1%)	68(60.2%)	112 (99.1%)	

The results of the test in table (4.14) showed that there were a statistically significant relation , between HTN and age groups among the members of the study sample, as indicated by the value of probability p = (0.043), which is less than the level of significance (0.05). It also showd that there were no statistically significant relation, between bleeding tendency, asthma ,CLD,CRF, heart diseases ,IHD,DM, rheumatoid arthritis ,epilepsy and age groups among the members of the study sample, as indicated by the value of probabilities p = (0.425),(0.564), (0.881), (0.051), (0.211), (0.881), (0.556), (0.337) and (0.337) respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non _significance.

Table 4.15: Relationship between Clinical Presentation and Management of Patients

Clinical Presentation			Management			Total	*P*.Value
			Conservative	Surgical burr hole	Surgical craniotomy		
Consciousness level	Confused	Count	0	32	2	34	.709
		% of Total	0.0	28.3	1.8	30.1	
	Loss of consciousness	Count	1	16	1	18	
		% of Total	0.9	14.2	0.9	15.9	
	Normal	Count	1	57	3	61	
		% of Total	0.9	50.4	2.7	54.0	
Motor symptom	Both limbs paralysis	Count	0	2	0	2	.653
		% of Total	0.0	1.8	0.0	1.8	
	Both limbs weakness	Count	0	8	0	8	
		% of Total	0.0	7.1	0.0	7.1	
	Left limbs paralysis	Count	0	2	0	2	
		% of Total	0.0	1.8	0.0	1.8	
	Left limbs weakness	Count	0	30	2	32	
		% of Total	0.0	26.5	1.8	28.3	
	Right limbs paralysis	Count	0	3	0	3	
		% of Total	0.0	2.7	0.0	2.7	
	Right limbs weakness	Count	0	41	2	43	
		% of Total	0.0	36.3	1.8	38.1	
	Normal	Count	2	19	2	23	

		% of Total	1.8	16.8	1.8	20.4	
Gait disturbance	**No**	**Count**	2	102	6	110	.889
		% of Total	1.8	90.3	5.3	97.3	
	Yes	**Count**	0	3	0	3	
		% of Total	0.0	2.7	0.0	2.7	
Speech	**Aphasia**	**Count**	0	6	0	6	.378
		% of Total	0.0	5.3	0.0	5.3	
	Slurred	**Count**	0	20	3	23	
		% of Total	0.0	17.7	2.7	20.4	
	Normal	**Count**	2	79	3	84	
		% of Total	1.8	69.9	2.7	74.3	
Sphincter Incontinence	**Both**	**Count**	0	6	0	6	.965
		% of Total	0.0	5.3	0.0	5.3	
	Stool	**Count**	0	2	0	2	
		% of Total	0.0	1.8	0.0	1.8	
	Urine	**Count**	0	8	1	9	
		% of Total	0.0	7.1%	0.9	8.0	
	Normal	**Count**	2	89	5	96	
		% of Total	1.8	78.8	4.4	85.0	
Headache	**Headache**	**Count**	1	55	3	59	.992
		% of Total	0.9	48.7	2.7	52.2	
	No headache	**Count**	1	50	3	54	
		% of Total	0.9	44.2	2.7	47.8	
convulsion	**convulsion**	**Count**	1	4	0	5	
		% of Total	0.9	3.5	0.0	4.4	

	no convulsion	**Count**	1	101	6	108	**.006**
		% of Total	0.9	89.4	5.3	95.6	
Sensory symptoms	**Anesthesia**	**Count**	0	1	0	1	.983
		% of Total	0.0	0.9	0.0	0.9	
	normal	**Count**	2	100	6	108	
		% of Total	1.8	88.5	5.3	95.6	
	Numbness	**Count**	0	4	0	4	
		% of Total	0.0	3.5	0.0	3.5	
Other symptoms	**Dizziness**	**Count**	0	5	0	5	.999
		% of Total	0.0	4.4	0.0	4.4	
	Easy fatigability	**Count**	0	1	0	1	
		% of Total	0.0	0.9	0.0	0.9	
	Epistaxis	**Count**	0	1	0	1	
		% of Total	0.0	0.9	0.0	0.9	
	Hallucinations	**Count**	0	2	0	2	
		% of Total	0.0	1.8	0.0	1.8	
	No other symptoms	**Count**	2	96	6	104	
		% of Total	1.8	85.0	5.3	92.0	

The results of the test in table (4.15) showed that there were a statistically significant relation, between convulsion and management among the members of the study sample, as indicated by the value of probability p = (0.006), which is less than the level of significance (0.05).

The results also showed that were no statistically significant relation , between the consciousness level and management among the members of the study sample, as the value of probability is p = (.709), which is more than the level of significance (0.05), which indicates the presence of non-significant differences with statistical non significance. The table also showed there were no statistically significant relation, among the gait disturbance, speech, , sphincter incontinence , headache, sensory symptoms and others symptoms and other symptoms with management among the members of the study sample, as indicated by the value of probabilities p = (.653),(0.889), (0.378) ,(0.965), (0.992)(0.983) (0.983) (0.999) respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non _significance.

Table 4.16: Relationship between Clinical presentation and Outcomes

Clinical Presentation			Outcomes		Total	*P*.Value
			Death	Improve		
Consciousness level	Confused	Count	1	33	34	.003
		% of Total	0.9%	29.2%	30.1%	
	Loss of consciousness	Count	3	15	18	
		% of Total	2.7%	13.3%	15.9%	
	Normal	Count	0	61	61	
		% of Total	0.0%	54.0%	54.0%	
Motor symptom	Both limbs paralysis	Count	0	2	2	.479
		% of Total	0.0%	1.8%	1.8%	
	Both limbs weakness	Count	1	7	8	
		% of Total	0.9%	6.2%	7.1%	
	Left limbs paralysis	Count	0	2	2	
		% of Total	0.0%	1.8%	1.8%	
	Left limbs weakness	Count	1	31	32	
		% of Total	0.9%	27.4%	28.3%	
	Right limbs paralysis	Count	0	3	3	
		% of Total	0.0%	2.7%	2.7%	
	Right limbs weakness	Count	0	43	43	
		% of Total	0.0%	38.1%	38.1%	
	Normal	Count	2	21	23	
		% of Total	1.8%	18.6%	20.4%	
Gait disturbance	No	Count	4	106	110	.737
		% of Total	3.5%	93.8%	97.3%	
	Yes	Count	0	3	3	
		% of Total	0.0%	2.7%	2.7%	
Speech	Aphasia	Count	0	6	6	.876
		% of Total	0.0%	5.3%	5.3%	
	Slurred	Count	1	22	23	
		% of Total	0.9%	19.5%	20.4%	
	Normal	Count	3	81	84	
		% of Total	2.7%	71.7%	74.3%	
Sphincter Incontinence	Stool	Count	0	2	2	.323
		% of Total	0.0%	1.8%	1.8%	
	Urine	Count	0	9	9	
		% of Total	0.0%	8.0%	8.0%	
	Both	Count	1	5	6	
		% of Total	0.9%	4.4%	5.3%	
	Normal	Count	3	93	96	
		% of Total	2.7%	82.3%	85.0%	
Headache	Headache	Count	2	57	59	.928
		% of Total	1.8%	50.4%	52.2%	
	No headache	Count	2	52	54	
		% of Total	1.8%	46.0%	47.8%	
Convulsion	convulsion	Count	0	5	5	.661
		% of Total	0.0%	4.4%	4.4%	
	No convulsion	Count	4	104	108	
		% of Total	3.5%	92.0%	95.6%	
Sensory symptoms	Anesthesia	Count	0	1	1	.908
		% of Total	0.0%	0.9%	0.9%	
	normal	Count	4	104	108	
		% of Total	3.7%	96.3%	100.0%	
	Numbness	Count	3.5%	92.0%	95.6%	
		% of Total	0.0%	3.5%	3.5%	

Others symptoms	**Dizziness**	**Count**	0	5	5	.986
		% of Total	0.0%	4.4%	4.4%	
	Easy fatigability	**Count**	0	1	1	
		% of Total	0.0%	0.9%	0.9%	
	Epistaxis	**Count**	0	1	1	
		% of Total	0.0%	0.9%	0.9%	
	Hallucinations	**Count**	0	2	2	
		% of Total	0.0%	1.8%	1.8%	
	no other symptoms	**Count**	4	100	104	
		% of Total	3.5%	88.5%	92.0%	

The results of the test in table(4.16) showed that there were a statistically significant relation , between consciousness level and outcomes among the members of the study sample, as indicated by the value of probability p = (0.003), which is less than the level of significance (0.05). It also showed that there were no statistically significant relation, between the motor symptoms ,gait disturbance, speech, , sphincter incontinence , headache, convulsion ,sensory symptoms and others symptoms and age groups among the members of the study sample, as indicated by the value of probabilities p = (.479),(0.737) (0.867) (0.323) (0.928) (0.661) (0.908) (0.986),respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non _significance.

Table 4.17: Relationship between Management & GCS at Admission

GCS at admission			**Management**			**Total**	***P*.Value**
			Conservative	**Surgical burr hole**	**Surgical craniotomy**		
GCS at admission	**< 9**	**Count**	1	3	0	4	**.035**
		% of Total	0.9%	2.7%	0.0%	3.5%	
	12-9	**Count**	0	13	1	14	
		% of Total	0.0%	11.5%	0.9%	12.4%	
	14-13	**Count**	0	32	2	34	
		% of Total	0.0%	28.3%	1.8%	30.1%	
	15	**Count**	1	57	3	61	
		% of Total	0.9%	50.4%	2.7%	54.0%	

The results of the test in table (4.17) showed that there was a statistically significant relation , between the GCS at admission and management among the members of the study sample, as indicated by the value of probability p = (0.035), which is less than the level of

significance (0.05), which indicates the presence of significant differences with statistical significance

Table 4.18: Relationship between Outcomes and GCS at Admission

GCS at Admission			Outcomes		Total	*P*.Value
			Death	Improve		
GCS at admission	< 9	Count	2	2	4	.001
		% of Total	1.8%	1.8%	3.5%	
	12-9	Count	1	13	14	
		% of Total	0.9%	11.5%	12.4%	
	14-13	Count	1	33	34	
		% of Total	0.9%	29.2%	30.1%	
	15	Count	0	61	61	
		% of Total	0.0%	54.0%	54.0%	

The result of the test in table (4.18) showed that there was a statistically significant relation , between the GCS at admission and outcomes among the members of the study sample, as indicated by the value of probability p = (0.001), which is less than the level of significance (0.05), which indicates the presence of significant differences with statistical significance

Table 4.19: Relationship between Chronic Diseases and GCS at Admission

Chronic Diseases			GCS at admission				Total	*P*.value
			< 9	12-9	14-13	15		
HTN	HTN	Count	2	3	11	13	29	.427
		% of Total	1.8%	2.7%	9.7%	11.5%	25.7%	
	No HTN	Count	2	11	23	48	84	
		% of Total	1.8%	9.7%	20.4%	42.5%	74.3%	
Bleeding tendency	Bleeding tendency	Count	1	0	5	8	14	.430
		% of Total	0.9%	0.0%	4.4%	7.1%	12.4%	
	NO bleeding tendency	Count	3	14	29	53	99	
		% of Total	2.7%	12.4%	25.7%	46.9%	87.6%	
Asthma	Asthma	Count	0	0	1	2	3	.898
		% of Total	0.0%	0.0%	0.9%	1.8%	2.7%	
	No asthma	Count	4	14	33	59	110	
		% of Total	3.5%	12.4%	29.2%	52.2%	97.3%	
CRF	CRF	Count	0	0	1	0	1	.504
		% of Total	0.0%	0.0%	0.9%	0.0%	0.9%	
	No CRF	Count	4	14	33	61	112	
		% of Total	3.5%	12.4%	29.2%	54.0%	99.1%	
CLD	CLD	Count	0	0	0	1	1	.835
		% of Total	0.0%	0.0%	0.0%	0.9%	0.9%	
	No CLD	Count	4	14	34	60	112	
		% of Total	3.5%	12.4%	30.1%	53.1%	99.1%	
Heart disease	Heart disease	Count	1	0	3	3	7	.269
		% of Total	0.9%	0.0%	2.7%	2.7%	6.2%	
	No heart disease	Count	3	14	31	58	106	
		% of Total	2.7%	12.4%	27.4%	51.3%	93.8%	
DM	DM	Count	0	2	2	0	4	0.53
		% of Total	0.0%	1.8%	1.8%	0.0%	3.5%	
	No DM	Count	4	12	32	61	109	
		% of Total	3.5%	10.6%	28.3%	54.0%	96.5%	
IHD	IHD	Count	0	0	0	1	1	. .835
		% of Total	0.0%	0.0%	0.0%	0.9%	0.9%	
	No IHD	Count	4	14	34	60	112	
		% of Total	3.5%	12.4%	30.1%	53.1%	99.1%	

Rheumatoid arthritis	**Rheumatoid arthritis**	**Count**	0	0	1	0	1	.504
		% of Total	0.0%	0.0%	0.9%	0.0%	0.9%	
	No rheumatoid arthritis	**Count**	4	14	33	61	112	
		% of Total	3.5%	12.4%	29.2%	54.0%	99.1%	
Epilepsy	**Epilepsy**	**Count**	0	0	1	0	1	.504
		% of Total	0.0%	0.0%	0.9%	0.0%	0.9%	
	No epilepsy	**Count**	4	14	33	61	112	
		% of Total	3.5%	12.4%	29.2%	54.0%	99.1%	

The results of the test in table (4.19) showed that there were no statistically significant relation , between GCS at admission and HTN among the members of the study sample, as the value of probability is p = (0.427), which is more than the level of significance (0.05), which indicates the presence of non-significant differences with statistical non significance. It also showed no statistically significant relation, between GCS at admission and bleeding tendency among the members of the study sample, as the value of probability is p = (0.430), which is more than the level of significance (0.05), which indicates the presence of non-significant differences with statistical non significance.

The results of the test above showed that there were no statistically significant relation, among GCS at admission and asthma, heart diseases and DM among the members of the study sample, as the values of probability are p = (0.898), (0.269) and (0.053), respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance. The table also showed that there was no statistically significant relation, among GCS at admission rheumatoid arthritis and epilepsy among the members of the study sample, as the value of probability each of them is p = (0.504) which is more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance. Finally, the table shows statistically significant relation, among GCS at admission and CRF and CLD among the members of the study sample, as the values of probability are p = (0.504), (0.835) respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance.

Table 4.20: Relationship between Consciousness Level and Chronic Diseases

Consciousness Level			Chronic Diseases			Total	*P*.Value
			Confused	Loss of consciousness	normal		
HTN	HTN	Count	11	5	13	29	0.302
		% of Total	9.7%	4.4%	11.5%	25.7%	
	No HTN	Count	23	13	48	84	
		% of Total	20.4%	11.5%	42.5%	74.3%	
Bleeding tendency	Bleeding tendency	Count	5	1	8	14	0.615
		% of Total	4.4%	0.9%	7.1%	12.4%	
	NO bleeding tendency	Count	29	17	53	99	
		% of Total	25.7%	15.0%	46.9%	87.6%	
Asthma	Asthma	Count	1	0	2	3	0.743
		% of Total	0.9%	0.0%	1.8%	2.7%	
	No asthma	Count	33	18	59	110	
		% of Total	29.2%	15.9%	52.2%	97.3%	
CRF	CRF	Count	1	0	0	1	0.309
		% of Total	0.9%	0.0%	0.0%	0.9%	
	No CRF	Count	33	18	61	112	
		% of Total	29.2%	15.9%	54.0%	99.1%	
CLD	CLD	Count	0	0	1	1	0.650
		% of Total	0.0%	0.0%	0.9%	0.9%	
	No CLD	Count	34	18	60	112	
		% of Total	30.1%	15.9%	53.1%	99.1%	
Heart disease	Heart disease,	Count	3	1	3	7	0.745
		% of Total	2.7%	0.9%	2.7%	6.2%	
	No heart disease,	Count	31	17	58	106	
		% of Total	27.4%	15.0%	51.3%	93.8%	
DM	DM	Count	2	2	0	4	0.054
		% of Total	1.8%	1.8%	0.0%	3.5%	
	No DM	Count	32	16	61	109	
		% of Total	28.3%	14.2%	54.0%	96.5%	
IHD	IHD	Count	0	0	1	1	0.650
		% of Total	0.0%	0.0%	0.9%	0.9%	
	No IHD	Count	34	18	60	112	
		% of Total	30.1%	15.9%	53.1%	99.1%	

Rheumatoid arthritis	**Rheumatoid arthritis**	**Count**	1	0	0	1	0.309
		% of Total	0.9%	0.0%	0.0%	0.9%	
	No rheumatoid arthritis	**Count**	33	18	61	112	
		% of Total	29.2%	15.9%	54.0%	99.1%	
Epilepsy	**Epilepsy**	**Count**	1	0	0	1	0.309
		% of Total	0.9%	0.0%	0.0%	0.9%	
	No epilepsy	**Count**	33	18	61	112	
		% of Total	29.2%	15.9%	54.0%	99.1%	

The results of the test in table (4.20) showed that there were no statistically significant relation , between consciousness level and HTN among the members of the study sample, as the value of probability is p = (0.302), which is more than the level of significance (0.05), which indicates the presence of non-significant differences with statistical non significance. It also showed no statistically significant relation, between consciousness level and bleeding tendency among the members of the study sample, as the value of probability is p = (0.615), which is more than the level of significance (0.05), which indicates the presence of non-significant differences with statistical non significance.

The results of the test above showed that there were no statistically significant relation, among asthma, CRF, CLD and consciousness level in the members of the study sample, as the values of probability are p = (0.743), (0.309) and (0.650), respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance. The table 4.20 also shows that there was no statistically significant relation, among consciousness level and heart disease, IHD, DM, rheumatoid arthritis and epilepsy in the members of the study sample, as the values of probability are p = (0.754), (.650), (.0.054), (0.309) and (0.309), respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance

Table 4.21: Relationship between Motor Symptoms and Chronic Diseases

Chronic Diseases			Motor symptom							Total	*P*.value
			Both limbs paralysis	Both limbs weakness	Left limbs paralysis	Left limbs weakness	normal	Right limbs paralysis	Right limbs weakness		
HTN	HTN	Count	2	1	0	8	7	1	10	29	0.260
		% of Total	1.8%	0.9%	0.0%	7.1%	6.2%	0.9%	8.8%	25.7%	
	No HTN	Count	0	7	2	24	16	2	33	84	
		% of Total	0.0%	6.2%	1.8%	21.2%	14.2%	1.8%	29.2%	74.3%	
Bleeding tendency	Bleeding tendency	Count	0	2	1	3	1	0	7	14	0.615
		% of Total	0.0%	1.8%	0.9%	2.7%	0.9%	0.0%	6.2%	12.4%	
	NO bleeding tendency	Count	2	6	1	29	22	3	36	99	
Asthma	Asthma	Count	0	0	0	3	0	0	0	3	0.743
		% of Total	0.0%	0.0%	0.0%	2.7%	0.0%	0.0%	0.0%	2.7%	
	No asthma	Count	2	8	2	29	23	3	43	110	
		% of Total	1.8%	7.1%	1.8%	25.7%	20.4%	2.7%	38.1%	97.3%	
CRF	CRF	Count	0	0	0	0	1	0	0	1	0.309

		% of Total	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.9%	
	No CRF	**Count**	2	8	2	32	22	3	43	112	
		% of Total	1.8%	7.1%	1.8%	28.3%	19.5%	2.7%	38.1%	99.1%	
CLD	**CLD**	**Count**	0	0	0	0	0	0	1	1	0.745
		% of Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.9%	
	No CLD	**Count**	2	8	2	32	23	3	42	112	
		% of Total	1.8%	7.1%	1.8%	28.3%	20.4%	2.7%	37.2%	99.1%	
Heart disease	**Heart disease,**	**Count**	0	0	0	2	2	0	3	7	0.745
		% of Total	0.0%	0.0%	0.0%	1.8%	1.8%	0.0%	2.7%	6.2%	
	No heart disease,	**Count**	2	8	2	30	21	3	40	106	
		% of Total	1.8%	7.1%	1.8%	26.5%	18.6%	2.7%	35.4%	93.8%	
DM	**DM**	**Count**	0	0	0	2	0	1	1	4	0.054
		% of Total	0.0%	0.0%	0.0%	1.8%	0.0%	0.9%	0.9%	3.5%	
	No DM	**Count**	2	8	2	30	23	2	42	109	
		% of Total	1.8%	7.1%	1.8%	26.5%	20.4%	1.8%	37.2%	96.5%	
IHD	**IHD**	**Count**	0	0	0	0	0	0	1	1	0.650
		% of Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.9%	

	No IHD	**Count**	2	8	2	32	23	3	42	112	
		% of Total	1.8%	7.1%	1.8%	28.3%	20.4%	2.7%	37.2%	99.1%	
Rheumatoid arthritis	**Rheumatoid arthritis**	**Count**	0	0	0	0	0	0	1	1	0.309
		% of Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.9%	
	No rheumatoid arthritis	**Count**	2	8	2	32	23	3	42	112	
		% of Total	1.8%	7.1%	1.8%	28.3%	20.4%	2.7%	37.2%	99.1%	
Epilepsy	**Epilepsy**	**Count**	0	0	0	0	0	0	1	1	0.309
		% of Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.9%	
	No epilepsy	**Count**	2	8	2	32	23	3	42	112	
		% of Total	1.8%	7.1%	1.8%	28.3%	20.4%	2.7%	37.2%	99.1%	

The results of the test in table (4.21) showed that there were no statistically significant relation , between motor symptoms and HTN among the members of the study sample, as the value of probability is p = (0.260), which is more than the level of significance (0.05), which indicates the presence of non-significant differences with statistical non significance. It also showed no statistically significant relation, between motor symptoms and bleeding tendency among the members of the study sample, as the value of probability is p = (.0.615), which is more than the level of significance (0.05), which indicates the presence of non-significant differences with statistical non significance.

The results of the test above also showed that there were no statistically significant relation, among asthma, CRF, CLD and motor symptoms in the members of the study sample, as the values of probability are p = (0.743), (.0309) and (0.754), respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance. The table 4.21 also shows that there was no statistically significant relation, among motor symptoms and heart disease, IHD, DM, rheumatoid arthritis and epilepsy in the members of the study sample, as the values of probability are p = (.0.754), (0.650), (.0.054), (0.039) and (0.309), respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance.

Table 4.22: Relationship between Gait Disturbance and Chronic Diseases

Chronic Diseases			Gait disturbance		Total	*P*.Value
			Yes	No		
HTN	HTN	Count	0	29	29	0.302
		% of Total	0.0%	25.7%	25.7%	
	No HTN	Count	3	81	84	
		% of Total	2.7%	71.7%	74.3%	
Bleeding tendency	Bleeding tendency	Count	0	14	14	0.509
		% of Total	0.0%	12.4%	12.4%	
	NO bleeding tendency	Count	3	96	99	
		% of Total	2.7%	85.0%	87.6%	
Asthma	Asthma	Count	0	3	3	0.772
		% of Total	0.0%	2.7%	2.7%	
	No asthma	Count	3	107	110	
		% of Total	2.7%	94.7%	97.3%	
CRF	CRF	Count	0	1	1	0.868
		% of Total	0.0%	0.9%	0.9%	
	No CRF	Count	3	109	112	
		% of Total	2.7%	96.5%	99.1%	
CLD	CLD	Count	0	1	1	0.868
		% of Total	0.0%	0.9%	0.9%	
	No CLD	Count	3	109	112	
		% of Total	2.7%	96.5%	99.1%	
Heart disease	Heart disease,	Count	0	7	7	0.652
		% of Total	0.0%	6.2%	6.2%	
	No heart disease,	Count	3	103	106	
		% of Total	2.7%	91.2%	93.8%	
DM	DM	Count	0	4	4	0.868
		% of Total	0.0%	3.5%	3.5%	
	No DM	Count	3	106	109	
		% of Total	2.7%	93.8%	96.5%	
IHD	IHD	Count	0	1	1	0.737
		% of Total	0.0%	0.9%	0.9%	
	No IHD	Count	3	109	112	
		% of Total	2.7%	96.5%	99.1%	
Rheumatoid arthritis	Rheumatoid arthritis	Count	0	1	1	0.868
		% of Total	0.0%	0.9%	0.9%	

	No rheumatoid arthritis	**Count**	3	109	112	
		% of Total	2.7%	96.5%	99.1%	
Epilepsy	**Epilepsy**	**Count**	0	1	1	0.868
		% of Total	0.0%	0.9%	0.9%	
	No epilepsy	**Count**	3	109	112	
		% of Total	2.7%	96.5%	99.1%	

The results of the test in table (4.22) showed that there were no statistically significant relation , between gait disturbance and HTN among the members of the study sample, as the value of probability is p = (.302), which is more than the level of significance (0.05), which indicates the presence of non-significant differences with statistical non significance. The results of the test above also showed that there were no statistically significant relation, among bleeding tendency, asthma, heart diseases, DM and gait disturbance in the members of the study sample, as the values of probability are p = (0.509), (.0.772), (0.652.), and (0.737) respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance.

The table 4.22 also shows that there was no statistically significant relation, among gait disturbance and CRF, CLD, IHD, rheumatoid arthritis and epilepsy in the members of the study sample, as the all have the same value of probability p = (0.868) which is more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance.

Table 4.23: Relationship between Speech and Chronic Diseases

Chronic Diseases			Speech			Total	*P*.Value
			Aphasia	normal	Slurred		
HTN	HTN	Count	1	21	7	29	0.760
		% of Total	0.9%	18.6%	6.2%	25.7%	
	No HTN	Count	5	63	16	84	
		% of Total	4.4%	55.8%	14.2%	74.3%	
Bleeding tendency	Bleeding tendency	Count	0	10	4	14	0.497
		% of Total	0.0%	8.8%	3.5%	12.4%	
	NO bleeding tendency	Count	6	74	19	99	
		% of Total	5.3%	65.5%	16.8%	87.6%	
Asthma	Asthma	Count	0	3	0	3	0.587
		% of Total	0.0%	2.7%	0.0%	2.7%	
	No asthma	Count	6	81	23	110	
		% of Total	5.3%	71.7%	20.4%	97.3%	
CRF	CRF	Count	0	1	0	1	0.840
		% of Total	0.0%	0.9%	0.0%	0.9%	
	No CRF	Count	6	83	23	112	
		% of Total	5.3%	73.5%	20.4%	99.1%	
CLD	CLD	Count	0	1	0	1	0.840
		% of Total	0.0%	0.9%	0.0%	0.9%	
	No CLD	Count	6	83	23	112	
		% of Total	5.3%	73.5%	20.4%	99.1%	
Heart disease	Heart disease,	Count	2	5	0	7	**0.010**
		% of Total	1.8%	4.4%	0.0%	6.2%	
	No heart disease,	Count	4	79	23	106	
		% of Total	3.5%	69.9%	20.4%	93.8%	
DM	DM	Count	1	2	1	4	0.182
		% of Total	0.9%	1.8%	0.9%	3.5%	
	No DM	Count	5	82	22	109	
		% of Total	4.4%	72.6%	19.5%	96.5%	
IHD	IHD	Count	0	1	0	1	0.840
		% of Total	0.0%	0.9%	0.0%	0.9%	
	No IHD	Count	6	83	23	112	
		% of Total	5.3%	73.5%	20.4%	99.1%	
Rheumatoid arthritis	Rheumatoid arthritis	Count	0	0	1	1	0.139
		% of Total	0.0%	0.0%	0.9%	0.9%	
	No rheumat	Count	6	84	22	112	
		% of Total	5.3%	74.3%	19.5%	99.1%	0.139

	oid arthritis						
Epilepsy	**Epilepsy**	**Count**	0	0	1	1	
		% of Total	0.0%	0.0%	0.9%	0.9%	
	No epilepsy	**Count**	6	84	22	112	
		% of Total	5.3%	74.3%	19.5%	99.1%	

The results of the test in table (4.23) showed that there were statistically significant relation, heart disease and speech among the members of the study sample, as the value of probability was *p* (0.010) which is less than the level of significance (0.05), which indicates the presence of significant differences with statistical significance. There was no statistically significant relation , between speech and HTN among the members of the study sample, as the value of probability is *p* = (0.760), which is more than the level of significance (0.05), which indicates the presence of non-significant differences with statistical non significance. The results of the test above also showed that there were no statistically significant relation, among bleeding tendency, asthma, DM and speech in the members of the study sample, as the values of probability are *p* = (0.479), (0.587), and (0.182.), respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance.

The table 4.23 also shows that there was no statistically significant relation, among speech and CRF, CLD, IHD, rheumatoid arthritis and epilepsy in the members of the study sample, as the values of probability are *p* = (0.840), (0.840), (0.840), (0.130) and (0.139) which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance.

Table 4.24: Relationship between Sphincter Incontinence and Chronic Diseases

Chronic Diseases			Sphincter Incontinence				Total	*P*.value
			Both	normal	Stool	Urine		
HTN	HTN	Count	0	25	2	2	29	0.048
		% of Total	0.0%	22.1%	1.8%	1.8%	25.7%	
	No HTN	Count	6	71	0	7	84	
		% of Total	5.3%	62.8%	0.0%	6.2%	74.3%	
Bleeding tendency	Bleeding tendency	Count	2	10	0	2	14	0.278
		% of Total	1.8%	8.8%	0.0%	1.8%	12.4%	
	NO bleeding tendency	Count	4	86	2	7	99	
		% of Total	3.5%	76.1%	1.8%	6.2%	87.6%	
Asthma	Asthma	Count	0	3	0	0	3	0.909
		% of Total	0.0%	2.7%	0.0%	0.0%	2.7%	
	No asthma	Count	6	93	2	9	110	
		% of Total	5.3%	82.3%	1.8%	8.0%	97.3%	
CRF	CRF	Count	0	1	0	0	1	0.981
		% of Total	0.0%	0.9%	0.0%	0.0%	0.9%	
	No CRF	Count	6	95	2	9	112	
		% of Total	5.3%	84.1%	1.8%	8.0%	99.1%	
CLD	CLD	Count	0	1	0	0	1	0.981
		% of Total	0.0%	0.9%	0.0%	0.0%	0.9%	
	No CLD	Count	6	95	2	9	112	
		% of Total	5.3%	84.1%	1.8%	8.0%	99.1%	
Heart disease	Heart disease,	Count	1	6	0	0	7	0.602
		% of Total	0.9%	5.3%	0.0%	0.0%	6.2%	
	No heart disease,	Count	5	90	2	9	106	
		% of Total	4.4%	79.6%	1.8%	8.0%	93.8%	
DM	DM	Count	1	2	0	1	4	0.981
		% of Total	0.9%	1.8%	0.0%	0.9%	3.5%	
	No DM	Count	5	94	2	8	109	
		% of Total	4.4%	83.2%	1.8%	7.1%	96.5%	
IHD	IHD	Count	0	1	0	0	1	0.157
		% of Total	0.0%	0.9%	0.0%	0.0%	0.9%	
	No IHD	Count	6	95	2	9	112	
		% of Total	5.3%	84.1%	1.8%	8.0%	99.1%	
Rheumatoid	Rheumatoid arthritis	Count	0	0	0	1	1	0.000
		% of Total	0.0%	0.0%	0.0%	0.9%	0.9%	

arthritis	**No rheumatoid arthritis**	**Count**	6	96	2	8	112	
		% of Total	5.3%	85.0%	1.8%	7.1%	99.1%	**0.000**
Epilepsy	**Epilepsy**	**Count**	0	0	0	1	1	
		% of Total	0.0%	0.0%	0.0%	0.9%	0.9%	
	No epilepsy	**Count**	6	96	2	8	112	
		% of Total	5.3%	85.0%	1.8%	7.1%	99.1%	

The results of the test in table (4.24) showed that there were statistically significant relation, among HTN, rheumatoid arthritis and epilepsy with sphincter incontinence among the members of the study sample, as the values of probability are p = (0.084), (.009) (.009) respectively, which is less than the level of significance (0.05), which indicates the presence of significant differences with statistical significance.

The results of the test above also showed that there were no statistically significant relation, among bleeding tendency, asthma, heart disease, DM and IHD with sphincter incontinence in the members of the study sample, as the values of probability are p = (0.278), (0.909), (0.602), (0.107), and (0.981), respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance.

Table 4.25: Relationship between Headache and Chronic Diseases

Chronic Diseases			Headache		Total	*P*.Value
			Headache	No headache		
HTN	HTN	Count	15	14	29	0.951
		% of Total	13.3%	12.4%	25.7%	
	No HTN	Count	44	40	84	
		% of Total	38.9%	35.4%	74.3%	
Bleeding tendency	Bleeding tendency	Count	7	7	14	0.859
		% of Total	6.2%	6.2%	12.4%	
	NO bleeding tendency	Count	52	47	99	
		% of Total	46.0%	41.6%	87.6%	
Asthma	Asthma	Count	1	2	3	0.507
		% of Total	0.9%	1.8%	2.7%	
	No asthma	Count	58	52	110	
		% of Total	51.3%	46.0%	97.3%	
CRF	CRF	Count	1	0	1	0.337
		% of Total	0.9%	0.0%	0.9%	
	No CRF	Count	58	54	112	
		% of Total	51.3%	47.8%	99.1%	
CLD	CLD	Count	0	1	1	0.294
		% of Total	0.0%	0.9%	0.9%	
	No CLD	Count	59	53	112	
		% of Total	52.2%	46.9%	99.1%	
Heart disease	Heart disease,	Count	4	3	7	0.787
		% of Total	3.5%	2.7%	6.2%	
	No heart disease,	Count	55	51	106	
		% of Total	48.7%	45.1%	93.8%	
DM	DM	Count	0	4	4	**0.033**
		% of Total	0.0%	3.5%	3.5%	
	No DM	Count	59	50	109	
		% of Total	52.2%	44.2%	96.5%	
IHD	IHD	Count	1	0	1	0.337
		% of Total	0.9%	0.0%	0.9%	
	No IHD	Count	58	54	112	
		% of Total	51.3%	47.8%	99.1%	

Rheumatoid arthritis	**Rheumatoid arthritis**	**Count**	1	0	1	0.337
	No rheumatoid arthritis	**% of Total**	0.9%	0.0%	0.9%	
		Count	58	54	112	
		% of Total	51.3%	47.8%	99.1%	
Epilepsy	**Epilepsy**	**Count**	1	0	1	0.337
		% of Total	0.9%	0.0%	0.9%	
	No epilepsy	**Count**	58	54	112	
		% of Total	51.3%	47.8%	99.1%	

The results of the test in table (4.25) showed that there were statistically significant relation between DM and headache among the members of the study sample, as the value of probability was p =(0.033) which is less than the level of significance (0.05), which indicates the presence of significant differences with statistical significance.

The results of the test above also showed that there were no statistically significant relation, among HTN, bleeding tendency, asthma, CRF, CLD, heart disease, and IHD, rheumatoid arthritis and epilepsy with headache in the members of the study sample, as the values of probability are p = (0.951), (0.859), (0.337), (0.294), (0.787), (0.337) (0.337) and (0,337) ,respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance.

Table 4.26: Relationship between Convulsion and Chronic Diseases

Chronic Diseases			Convulsion		Total	*P*.Value
			Convulsion	No Convulsion		
HTN	HTN	Count	0	29	29	0.179
		% of Total	0.0%	25.7%	25.7%	
	No HTN	Count	5	79	84	
		% of Total	4.4%	69.9%	74.3%	
Bleeding tendency	Bleeding tendency	Count	1	13	14	0.597
		% of Total	0.9%	11.5%	12.4%	
	NO bleeding tendency	Count	4	95	99	
		% of Total	3.5%	84.1%	87.6%	
Asthma	Asthma	Count	0	1	3	0.706
		% of Total	0.0%	0.9%	2.7%	
	No asthma	Count	5	107	110	
		% of Total	4.4%	94.7%	97.3%	
CRF	CRF	Count	0	1	1	0.829
		% of Total	0.0%	0.9%	0.9%	
	No CRF	Count	5	107	112	
		% of Total	4.4%	94.7%	99.1%	
CLD	CLD	Count	0	0	1	0.829
		% of Total	1	1	0.9%	
	No CLD	Count	0.0%	0.0%	112	
		% of Total	0.9%	0.9%	99.1%	
Heart disease	Heart disease,	Count	1	6	7	0.109
		% of Total	0.9%	5.3%	6.2%	
	No heart disease,	Count	4	102	106	
		% of Total	3.5%	90.3%	93.8%	
DM	DM	Count	0	4	4	**0.661**
		% of Total	0.0%	3.5%	3.5%	
	No DM	Count	5	104	109	
		% of Total	4.4%	92.0%	96.5%	
IHD	IHD	Count	0	1	1	0.829
		% of Total	0.0%	0.9%	0.9%	
	No IHD	Count	5	107	112	
		% of Total	4.4%	94.7%	99.1%	
Rheumatoid arthritis	Rheumatoid arthritis	Count	0	1	1	0.829

	No rheumatoid arthritis	**% of Total**	0.0%	0.9%	0.9%	
		Count	5	107	112	
		% of Total	4.4%	94.7%	99.1%	
Epilepsy	**Epilepsy**	**Count**	0	1	1	0.829
		% of Total	0.0%	0.9%	0.9%	
	No epilepsy	**Count**	5	107	112	
		% of Total	4.4%	94.7%	99.1%	

The results of the test in table (4.26) showed that there were no statistically significant relation , between convulsion and HTN among the members of the study sample, as the value of probability is p = (0.179), which is more than the level of significance (0.05), which indicates the presence of non-significant differences with statistical non significance. The results of the test above also showed that there were no statistically significant relation, among bleeding tendency, asthma, heart diseases, IHD and DM with convulsion as in the members of the study sample, as the values of probability are p = (0.597), (.0.706), (0.109), (0.829) and (0.661), respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance.

The table 4.26 also shows that there was no statistically significant relation, among convulsion and CRF, CLD, IHD, rheumatoid arthritis and epilepsy in the members of the study sample, as the all have the same value of probability p = (0.829) which is more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance.

Table 4.27: Relationship between Sensory Symptoms and Chronic Diseases

Chronic Diseases			Sensory symptoms			Total	*P*.Value
			Anesthesia	normal	Numbness		
HTN	HTN	Count	0	29	0	29	0.405
		% of Total	0.0%	25.7%	0.0%	25.7%	
	No HTN	Count	1	79	4	84	
		% of Total	0.9%	69.9%	3.5%	74.3%	
Bleeding tendency	Bleeding tendency	Count	0	14	0	14	0.691
		% of Total	0.0%	12.4%	0.0%	12.4%	
	NO bleeding tendency	Count	1	94	4	99	
		% of Total	0.9%	83.2%	3.5%	87.6%	
Asthma	Asthma	Count	0	2	1	3	**0.018**
		% of Total	0.0%	1.8%	0.9%	2.7%	
	No asthma	Count	1	106	3	110	
		% of Total	0.9%	93.8%	2.7%	97.3%	
CRF	CRF	Count	0	1	0	1	0.977
		% of Total	0.0%	0.9%	0.0%	0.9%	
	No CRF	Count	1	107	4	112	
		% of Total	0.9%	94.7%	3.5%	99.1%	
CLD	CLD	Count	0	1	0	1	0.977
		% of Total	0.0%	0.9%	0.0%	0.9%	
	No CLD	Count	1	107	4	112	
		% of Total	0.9%	94.7%	3.5%	99.1%	
Heart disease	Heart disease,	Count	0	7	0	7	0.841
		% of Total	0.0%	6.2%	0.0%	6.2%	
	No heart disease,	Count	1	101	4	106	
		% of Total	0.9%	89.4%	3.5%	93.8%	
DM	DM	Count	0	4	0	4	0.908
		% of Total	0.0%	3.5%	0.0%	3.5%	
	No DM	Count	1	104	4	109	
		% of Total	0.9%	92.0%	3.5%	96.5%	
IHD	IHD	Count	0	1	0	1	0.977
		% of Total	0.0%	0.9%	0.0%	0.9%	
	No IHD	Count	1	107	4	112	
		% of Total	0.9%	94.7%	3.5%	99.1%	
Rheumatoid arthritis	Rheumatoid arthritis	Count	0	1	0	1	0.977
		% of Total	0.0%	0.9%	0.0%	0.9%	
	No rheumatoid arthritis	Count	1	107	4	112	
		% of Total	0.9%	94.7%	3.5%	99.1%	

Epilepsy	**Epilepsy**	**Count**	0	1	0	1	0.977
		% of Total	0.0%	0.9%	0.0%	0.9%	
	No epilepsy	**Count**	1	107	4	112	
		% of Total	0.9%	94.7%	3.5%	99.1%	

The results of the test in table (4.27) showed that there were statistically significant relation , between asthma and sensory symptoms among the members of the study sample, as the value of probability is p = (.018) , which is less than the level of significance (0.05), which indicates the presence of significant differences with statistical significance. The results of the test above also showed that there were no statistically significant relation, among, HTN, bleeding tendency, heart diseases, and DM with sensory symptoms as in the members of the study sample, as the values of probability are p = (0.405), (.0.691), (0.841), and (0.908), respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance.

The table 4.27 also shows that there was no statistically significant relation, among CRF, CLD, IHD, rheumatoid arthritis and epilepsy with sensory in the members of the study sample, as the all have the same value of probability p = (0.977) which is more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance.

Table 4.28: Relationship between Other Symptoms and Chronic Diseases

Chronic Diseases			Others symptoms					Total	*P*.Value
			Dizziness	Easy fatigability	Epistaxis	Hallucinations	no other symptoms		
HTN	HTN	Count	1	0	0	1	27	29	0.844
		% of Total	0.9	0.0	0.0	0.9	23.9	25.7	
	No HTN	Count	4	1	1	1	77	84	
		% of Total	3.5	0.9	0.9	0.9	68.1	74.3	
Bleeding tendency	Bleeding tendency	Count	0	0	0	1	13	14	0.463
		% of Total	0.0	0.0	0.0	0.9	11.5	12.4	
	NO bleeding tendency	Count	5	1	1	1	91	99	
		% of Total	4.4	0.9	0.9	0.9	80.5	87.6	
Asthma	Asthma	Count	0	0	0	0	3	3	0.992
		% of Total	0.0	0.0	0.0	0.0	2.7	2.7	
	No asthma	Count	5	1	1	2	101	110	
		% of Total	4.	0.9	0.9	1.8	89.4	97.3	
CRF	CRF	Count	0	0	0	0	1	1	0.999

		% of Total	0.0	0.0	0.0	0.0	0.9	0.9	
	No CRF	**Count**	5	1	1	2	103	112	
		% of Total	4.4	0.9	0.9	1.8	91.2	99.1	
CLD	**CLD**	**Count**	0	0	0	0	1	1	0.999
		% of Total	0.0	0.0	0.0	0.0	0.9	0.9	
	No CLD	**Count**	5	1	1	2	103	112	
		% of Total	4.4	0.9	0.9	1.8	91.2	99.1	
Heart disease	**Heart disease,**	**Count**	0	0	0	1	6	7	0.131
		% of Total	0.0	0.0	0.0	0.9	5.3	6.2	
	No heart disease,	**Count**	5	1	1	1	98	106	
		% of Total	4.4	0.9	0.9	0.9	86.7	93.8	
DM	**DM**	**Count**	0	0	0	0	4	4	0.986
		% of Total	0.0	0.0	0.0	0.0	3.5	3.5	
	No DM	**Count**	5	1	1	2	100	109	
		% of Total	4.4	0.9	0.9	1.8	88.5	96.5	
IHD	**IHD**	**Count**	0	0	0	0	1	1	0.999
		% of Total	0.0	0.0	0.0	0.0	0.9	0.9	

	No IHD	**Count**	5	1	1	2	103	112	
		% of Total	4.4	0.9	0.9	1.8	91.2	99.1	
Rheumatoid arthritis	**Rheumatoid arthritis**	**Count**	1	0	0	0	0	1	**0.000**
		% of Total	0.9	0.0	0.0	0.0	0.0	0.9	
	No rheumatoid arthritis	**Count**	4	1	1	2	104	112	
		% of Total	3.5	0.9	0.9	1.8	92.0	99.1	
Epilepsy	**Epilepsy**	**Count**	1	0	0	0	0	1	**0.000**
		% of Total	0.9	0.0	0.0	0.0	0.0	0.9	
	No epilepsy	**Count**	4	1	1	2	104	112	
		% of Total	3.5	0.9	0.9	1.8	92.0	99.1	

The results of the test in table (4.28) showed that there were statistically significant relation , among rheumatoid arthritis, epilepsy and other symptoms among the members of the study sample, as the value of probability p = (0.001)(0.001) respectively, which is less than the level of significance (0.05), which indicates the presence of significant differences with statistical significance. The results of the test above also showed that there were no statistically significant relation, among, HTN, bleeding tendency, asthma, heart diseases, and DM with other symptoms as in the members of the study sample, as the values of probability are p = (0.844), (.0.463), (0.992), (0.131) and (0.986), respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance.

The table 4.28 also shows that there was no statistically significant relation, among CRF, CLD, IHD, with other symptoms in the members of the study sample, as the all have the same value of probability p = (0.999) which is more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance.

Table 4.29: Relationship between Outcomes and Chronic Diseases

Chronic Diseases			Outcomes		Total	*P*.value
			Death	Improve		
HTN	HTN	Count	1	28	29	0.975
		% of Total	0.9%	24.8%	25.7%	
	No HTN	Count	3	81	84	
		% of Total	2.7%	71.7%	74.3%	
Bleeding tendency	Bleeding tendency	Count	1	13	14	0.436
		% of Total	0.9%	11.5%	12.4%	
	NO bleeding tendency	Count	3	96	99	
		% of Total	2.7%	85.0%	87.6%	
Asthma	Asthma	Count	0	3	3	0.737
		% of Total	0.0%	2.7%	2.7%	
	No asthma	Count	4	106	110	
		% of Total	3.5%	93.8%	97.3%	
CRF	CRF	Count	0	1	1	0.847
		% of Total	0.0%	0.9%	0.9%	
	No CRF	Count	4	108	112	
		% of Total	3.5%	95.6%	99.1%	
CLD	CLD	Count	0	1	1	0.847
		% of Total	0.0%	0.9%	0.9%	
	No CLD	Count	4	108	112	
		% of Total	3.5%	95.6%	99.1%	
Heart disease	Heart disease,	Count	0	7	7	0.601
		% of Total	0.0%	6.2%	6.2%	
	No heart disease,	Count	4	102	106	
		% of Total	3.5%	90.3%	93.8%	
IHD	IHD	Count	0	1	1	0.847
		% of Total	0.0%	0.9%	0.9%	
	No IHD	Count	4	108	112	
		% of Total	3.5%	95.6%	99.1%	
DM	DM	Count	0	4	4	0.692
		% of Total	0.0%	3.5%	3.5%	
	No DM	Count	4	105	109	
		% of Total	3.5%	92.9%	96.5%	
Rheumatoid arthritis	Rheumatoid arthritis	Count	0	1	1	0.847
		% of Total	0.0%	0.9%	0.9%	

	No rheumatoid arthritis	**Count**	4	108	112	
		% of Total	3.5%	95.6%	99.1%	
Epilepsy	**Epilepsy**	**Count**	0	1	1	0.847
		% of Total	0.0%	0.9%	0.9%	
	No epilepsy	**Count**	4	108	112	
		% of Total	3.5%	95.6%	99.1%	

The results of the test above showed that there were no statistically significant relation , between outcomes and HTN among the members of the study sample, as the valueof probability is p = (0.975), which is more than the level of significance (0.05), which indicates the presence of non-significant differences with statistical non significance. It also showed no statistically significant relation, between outcomes and bleeding tendency among the members of the study sample, as the value of probability is p = (.0.436), which is more than the level of significance (0.05), which indicates the presence of non-significant differences with statistical non significance.

The results of the test above showed that there were no statistically significant relation, among outcomes asthma, heart diseases and and DM among the members of the study sample, as the values of probability are p = (0.737), (0.601) and (0.696), respectively which are more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance. The table also showed that there was no statistically significant relation, among outcomes CRF, CLD, IHD, rheumatoid arthritis and epilepsy among the members of the study sample, as the value of probability for all of them is p = (0.847) which is more than the level of significance (0.05), which indicate the presence of non-significant differences with statistical non significance

Table 4.30: Relationship between Outcomes and Management

Management			Outcomes		Total	*P*.Value
			Death	Improve		
Management	Conservative	Count	1	1	2	0.001
		% of Total	0.9%	0.9%	1.8%	
	Surgical burr hole	Count	3	102	105	
		% of Total	2.7%	90.3%	92.9%	
	Surgical craniotomy	Count	0	6	6	
		% of Total	0.0%	5.3%	5.3%	
Total		Count	4	109	113	
		% of Total	3.5%	96.5%	100.0%	

The results of the test above showed that there was a statistically significant relation , between the management and outcomes among the members of the study sample, as indicated by the value of probability p = (0.001), which is less than the level of significance (0.05), which indicates the presence of significant differences with statistical significance

CHAPTER 5 :DISSCUSION

The study is a retrospective study in which the researchers analyzed 113 archive files of patients who were diagnosed with chronic subdural hematoma. The study aims to identify the clinical presentation variants in chronic subdural hematoma (CSDH) patients in Al_Thawra Modern General Hospital in Sana'a city, Yemen. The main research question is focused on determining the most common presentation of chronic subdural hematoma and whether there is a relationship between the age of the patients and their presentations. The specific objectives of the study are to identify the variant presentations in CSDH patients, assess uncommon presentations, and determine the relationship between the age of the patients and their presentations. The study also aims to provide better insights for neurosurgeons and other medical staff members to diagnose and treat chronic subdural hematoma patients.

In terms of sociodemographic data, the results of the study indicate that CSDH primarily affects older males with a mean age of 61.8. The majority of patients were aged more than 60 years as 60.2% of patients were at this age group followed by patients who were aged between 41_60 years as (23%) were in this age group, then come patients who were aged between 41_60 years as 11.5% represented this age group , and the least age group was dedicated to younger than 20 years as (5.3%) of patients were in this age group .According to a study that was performed at Mbarara Regional Referral Hospital (MRRH) in Uganda between January 2014 and June 2017,the mean patient age was 60.2 years (Kitya et al., 2018).

Additionally, 77.9% of the sample represented males, and 22.1% represented females. According to study that was performed in Clinic of Neurosurgery at University Clinical center of Kosovo, 77.3% were males and 22.7% females(Mekaj et al., 2015).

The highest year of admission was 2022, with 23% of the sample, while the lowest was in 2019, with only 8%.

In the study, motor symptoms either in form of weakness or paralysis were the most common presenting symptoms with 79.6% of patients. Then, symptoms of increased ICP with 54.0% of patients, where 52.2% of patients have reported headache and only (4.4%) of patients complained of convulsions. (46.0%) of patients reported alteration in the level of consciousness with (15.9%) complained of total loss of consciousness. Frequencies of speech abnormalities, sphincter incontinence, other symptoms and sensory abnormalities

were as fallowing (25.7%) (15.0 %) (10.0%) and (4.4%), respectively. The least documented symptom in our study was gait disturbance with (2.7%) of patients complained of it. Similar study at CHU Sylvanus Olympio (Lome) reported, that motor weakness was the most common clinical presentation with 56.1 % followed by headache with 51.5% and confusion 34.8% (Doléagbénou et al., 2020). According to a study was performed at Mbarara Regional Referral Hospital (MRRH) in Uganda between January 2014 and June 2017, headache was the most common presenting symptom with(89.6%) of patients , followed by confusion and limb weakness with(71.7%) (70.0%) of patients respectively (Kitya et al., 2018).Another study at The Lagos University Teaching Hospital, Headache (89%) was the commonest symptom, followed by motor deficits with(63%) mainly hemiparesis, altered/fluctuating levels of consciousness with (54.2%), inappropriate speech with (16.6%), seizures with (10.4%) and incontinence with (6.3%)(Bankole et al., 2011).

Compared to age, symptoms presented in those who were older than 60 years as follows: motor symptoms with (54.0%), altered level of consciousness with (27.5%), headache with (26.5%), speech abnormalities with (17.7%), sphincter incontinence with (11.5%), other symptoms with (3.5), sensory symptoms with (2.7%), convulsion in (1.8%) and gait disturbance with (0.9%). While in those who were ≤60 years, symptoms order as follows: headache with (25.6%), motor symptoms with (25.6%), altered level of consciousness with (18.6%), speech abnormalities with (7.9%), other symptoms with (4.4%), sphincter incontinence with (3.5%), convulsion with (2.7%) sensory symptoms with (1.8%), and gait disturbance with (1.8%). A similar study shows that the leading symptom in the age group ≥60 years was headache (53.5%) whereas the most frequent symptom in patients < 60 years was hemiparesis and/or reflex asymmetry (39.4%) (Ernestus, Beldzinski, Lanfermann, & Klug, 1997).

The study shows that the comorbidities that CSDH patients have were as follows , hypertension with 25.7% of patients followed by bleeding tendency with 12.4, heart disorders with 6.2%, DM with 3.5%, asthma with 2.7% of and the lowest rate was with CRF, CLD, IHD, rheumatoid arthritis and epilepsy all had the same percentage with 0.9%. A study at The Lagos University Teaching Hospital, shows that 22.9% of patients were hypertensive and 4.2% were diabetic (Bankole et al., 2011).

The researchers were able to identify an etiology in 54.9% of patients. Head trauma was the main etiological factor with 46.9% of patients, where 30.1% of patients reported fall down and 16.8% of patients reported road traffic accident. Recurrence of the CSDH was the cause in 6.2% of patients and 1.8% of patients reported CSDH after any brain operation. The

cause remained undocumented in 45.1% of patients. According to a study in Department of Neurosurgery, Juntendo University Izunagaoka Hospital, a definite history of head injury was obtained in (57%) of patients and a past history of neurosurgery in (8%) of patients. However, in (29%) of patients no cause could be identified (Mori & Maeda, 2001).

Regarding the site of hematoma, the study shows that hematoma was unilateral in 77.9% of patients where 44.2% of patients had CSDH on the left site, and in 33.6% the hematoma was on the right site. In 22.1% of patients the hematoma was bilateral. According to a study in Department of Neurosurgery, Juntendo University Izunagaoka Hospital, the hematoma was on the left in 52% of cases, on the right in 30.4% of cases and bilateral in 17.6% of patients (Mori & Maeda, 2001). Another study at Mbarara Regional Referral Hospital (MRRH) in Uganda shows that, hematoma was on right in 42.3% of cases , on the left in 36.3% of cases and bilateral in 21.4% of cases(Kitya et al., 2018).

Regarding GCS at admission ,the study shows that GCS at admission of patients distribution, was 15 in 61 patients (54.0%) , GCS between 14-13 in 34 patients (30.1 %) , between12-9 in 14 patients (12.4%) and <9 in 4 patients (3.5 %) .

In the study, most of patient (92.9%), were managed with surgical burr hole, then by surgical craniotomy and conservative by (5.3%), (1.8%) respectively. A similar published by the Canadian Geriatrics Society, shows that burr hole was done in (95.3%) patients and larger craniotomy in (4.7%) of patients (Sundblom, Sandberg, & Ronne-Engström, 2022). Regarding outcomes, the study shows that most patients with chronic subdural hematoma were improving as their number reached (96.5%) of the patients, and only (3.5%) of the patient died.

The study shows that there was a statistically significant relation, between motor symptoms and age groups among the members of the study sample, as indicated by the value of probability p = (.009).It also shows that there was a statistically significant relation, between convulsion and age groups among the members of the study sample, as indicated by the value of probability p = (.006).There was also a statistically significant relation , between HTN and age groups among the members of the study sample, as indicated by the value of probability p = (0.043).

During analysis, the study showed that there was a statistically significant relation, between convulsion and management among the members of the study sample, as indicated by the value of probability p = (.006).

The study showed that there was a statistically significant relation between consciousness level and outcomes among the members of the study sample, as indicated by the value of probability p = (.003).It also showed that there was a statistically significant relation between the GCS at admission and management among the members of the study sample as indicated by the value of probability *p* = (.035).

The study also shows, that there was a statistically significant relation between the GCS at admission and outcomes among the members of the study sample, as indicated by the value of probability p = (.001). In 2019, a retrospective study was conducted at Dr. George Mukhari Academic Hospital in South Africa to determine the profile and outcomes of patients with chronic subdural hematomas. The study found a significant relationship between the presenting Glasgow Coma Scale (GCS) and patient outcomes (*p*= 0.002) (Mosadi, Kelly, & Lekgwara, 2019). In 2017, a study at the Department of Neurosurgery, Ulsan University Hospital, Korea, divided patients into "severe" and "mild" groups based on initial GCS and found a strong association between GCS and patient prognosis ($p < 0.001$) (H. S. Park et al., 2014). Another study conducted in 2007 focused on outcomes and recurrence rates in chronic subdural hematomas, with statistical significance set at $p < 0.05$ (Amirjamshidi et al., 2007) .

The study shows, that there was a statistically significant relation between heart disease and speech among the members of the study sample, as the value of probability was *p* (0.010). It also shows that there was a statistically significant relation between rheumatoid arthritis, epilepsy and sphincter incontinence among the members of the study sample, as the value of probability *p* = (.009) (.009) respectively. In addition, the study showed a statistically significant relation between headache and DM among the members of the study sample, as the value of probability is *p* = (.033).Moreover, there was a statistically significant relation between asthma and sensory symptoms among the members of the study sample, as the value of probability is *p* = (.018). Results of the study showed that there were no statistically significant relation, between outcomes and chronic disease among the members of the study.

The study showed that there was a statistically significant relation between the management and outcomes among the members of the study sample as indicated by the value of probability *p* = (.001).

5.1 STUDY LIMITIONS

There are several limitations to our study.

- Our sample size was limited to only 113patients, thus making it difficult to determine whether our findings over- or underestimate the true frequencies of patient presentation, injury mechanisms, and outcomes.
- This study was limited to one referral hospital located in Sana'a city, Yemen, thus making it difficult to extrapolate our conclusions to other populations that are more urbanized or more rural.
- Additionally, given that the data were collected from patient files completed upon patient discharge, some data were missing.

5.2 CONCLUSION

Chronic subdural hematoma (CSDH) is an encapsulated collection of blood, located between the dura mater and arachnoid mater lasting longer than 3 weeks. According to current the study, CSDH primarily affects older males. The study showed that Motor symptoms in form of weakness or paralysis were the most common presenting symptoms followed by headache, alteration in level of consciousness, speech abnormalities, sphincter incontinence, other symptoms and sensory abnormalities .The least documented symptom in the study was gait disturbance .The main etiological factor was trauma in form of fall down. The cause was undocumented in less than the half of the patients. The highest reported comorbidities in CSDH patients were hypertension, bleeding tendency, heart disorders and DM. Regarding the site of hematoma, the majority of cases was unilateral on the left site more than that on the right site and bilateral hematoma was less common. Regarding GCS at admission, most of patient admitted had GCS of 15. Most of patient were managed with surgical burr hole and almost of all patients showed improvement after the management.

5.3 RECOMMENDATIONS

Based on the results of the study, the study recommends the following:

- Carry out prospective studies to evaluate the long term outcomes of CSDH
- Develop health education programs, conferences and training programs for healthcare professionals.
- Improve the quality and completeness of medical records by hospitals and medical professionals.

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HOWARD, O. G., & HEALTHCARE CENTER, U. COMES NOW, the Plaintiff Joyce England, individually and as Administratrix of the Estate of Glen Howard, and on behalf of and for the use and benefit of the Wrongful Death Beneficiaries of Glen Howard, submits the following Response to Defendant's Motion for Judgment Notwithstanding the Verdict or, in the alternative, for New Trial and Supporting .

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APPENICES

APPENDIX 1: QUESTIONNAIRE

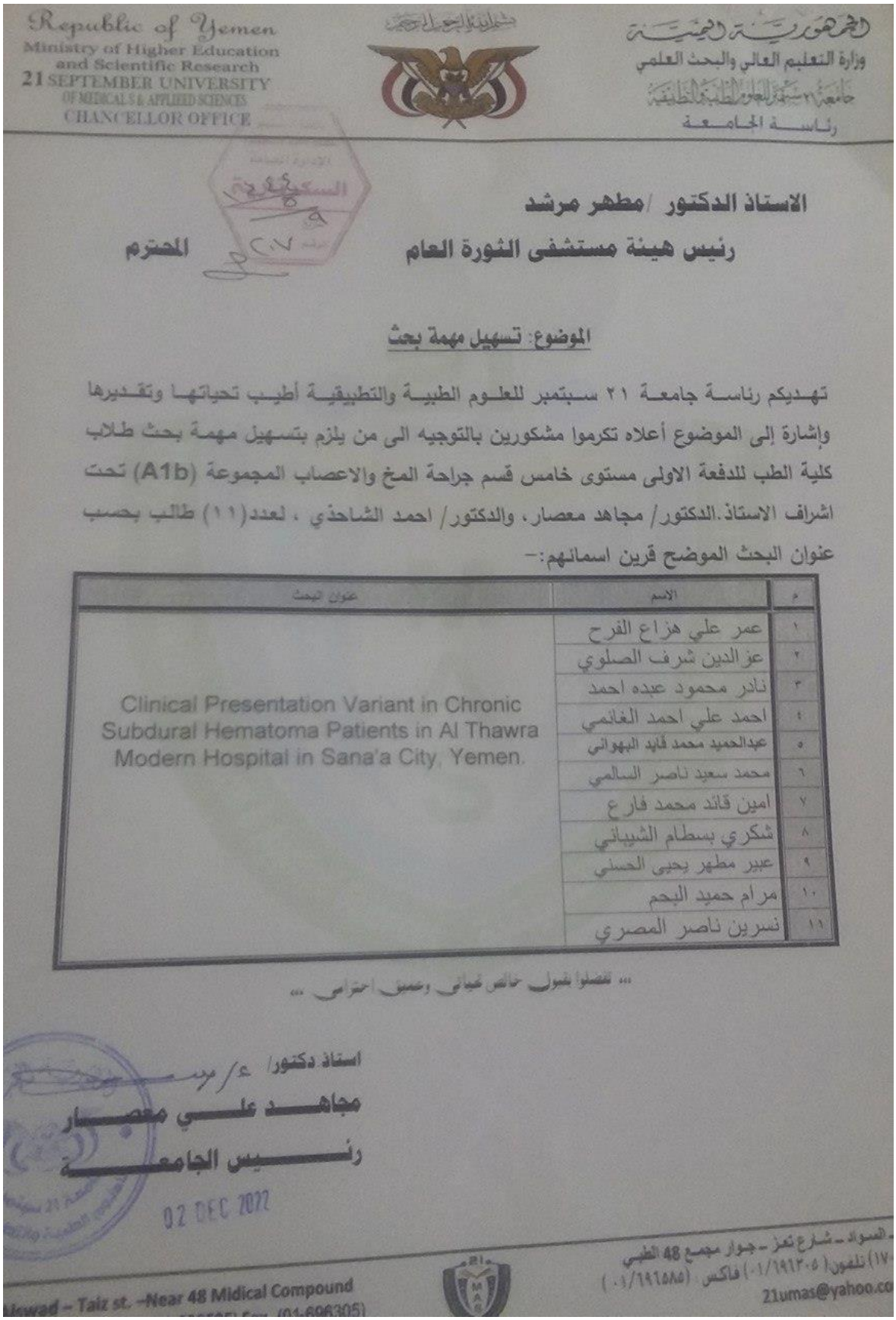
Republic of Yemen
Ministry of higher education and Scientific Research
21 September University for Medical & Applied sciences
Faculty of Medicine

الجمهورية اليمنية
وزارة التعليم العالي والبحث العلمي
جامعة ٢١ سبتمبر للعلوم الطبية والتطبيقية
كلية الطب البشري

Sociodemographic data	**Age:** < 20 (……) 20-40 (……) 41-60 (……) >60 (……) **Gender:** Male/female (……..) **FILE number:** (……..) **Date of Admission :(…….)**				
Clinical presentation	**consciousness Level**	Normal (……)	Confuse (…)	Loss of consciousness (……)	
	Motor symptoms	Weakness	Rt limbs (……)	Lt limbs (……)	Both (……)
		Paralyses	Rt limbs (……)	Lt limbs (……)	Both (……)
	Gait disturbance	Yes (……)		No (……)	
	Speech	Normal (……)	Aphasia (……)	Slurred (……)	
	Sphincter control	Normal (……)	Uren (……)	Stool (……)	Both (……)
	ICP	Yes ICP (……) No ICP (……)	Headache (……)	Convulsion (……)	Other (……)
	Sensory symptoms	Normal (……)	Anesthesia (……)	Numbness (……)	
	Other symptoms	Normal (……)	Dizziness (……)	Fatigability (……)	Epitasis (……) Hallucinations (……)

Chronic disease	DM (…..)	HTN (…..)	Heart disease (……)	CLD (……)	Asthma (…..)
	Bleeding tendency (…..)	CRF (…..)	IHD (…..)	Rheumatoid arthritis (…..)	Epilepsy (…..)
Etiology	Post fall down (…..)	Post RTA (…..)	Recurrent (…..)	Post any brain surgery (…..)	Undocumented (…..)
Site	Left (…..)		Right (…..)		Bilateral (…..)
GCS	15 (…..)	13-14 (…..)	12-9 (…..)		Less than 9 (…..)
Management	Conservative (…..)	Burr hole(…..)	Surgical craniotomy (…..)		
Outcomes	Improved (…..)		Death (…..)		

APPENDIX 2: DESPATCHES



Republic of Yemen
Ministry of Higher Education and Scientific Research
21 SEPTEMBER UNIVERSITY OF MEDICAL & APPLIED SCIENCES
CHANCELLOR OFFICE

الجمهورية اليمنية
وزارة التعليم العالي والبحث العلمي
جامعة ٢١ سبتمبر للعلوم الطبية والتطبيقية
رئاسة الجامعة

الاستاذ الدكتور /مطهر مرشد
رئيس هيئة مستشفى الثورة العام المحترم

الموضوع: تسهيل مهمة بحث

تهديكم رئاسة جامعة ٢١ سبتمبر للعلوم الطبية والتطبيقية أطيب تحياتها وتقديرها وإشارة إلى الموضوع أعلاه تكرموا مشكورين بالتوجيه الى من يلزم بتسهيل مهمة بحث طلاب كلية الطب للدفعة الاولى مستوى خامس قسم جراحة المخ والاعصاب المجموعة (A1b) تحت اشراف الاستاذ.الدكتور/ مجاهد معصار، والدكتور/ احمد الشاحذي ، لعدد(١١) طالب بحسب عنوان البحث الموضح قرين اسمائهم:-

م	الاسم	عنوان البحث
١	عمر علي هزاع الفرح	Clinical Presentation Variant in Chronic Subdural Hematoma Patients in Al Thawra Modern Hospital in Sana'a City, Yemen.
٢	عز الدين شرف الصلوي	
٣	نادر محمود عبده احمد	
٤	احمد علي احمد الغانمي	
٥	عبدالحميد محمد قايد البهواني	
٦	محمد سعيد ناصر السالمي	
٧	امين قائد محمد فارع	
٨	شكري بسطام الشيباني	
٩	عبير مطهر يحيى الحسني	
١٠	مرام حميد البحم	
١١	نسرين ناصر المصري	

... تفضلوا بقبول خالص تحياتي وعميق احترامي ...

استاذ دكتور/ ع/ مرشد
مجاهد علي معصار
رئيس الجامعة

02 DEC 2022

Howad – Taiz st. –Near 48 Midical Compound
الهوادة – شارع تعز – جوار مجمع 48 الطبي
(١٧) تلفون (٠١/٦٩١٣٠٥) فاكس (٠١/٦٩١٥٨٥)
21umas@yahoo.co

الجمهورية اليمنية
هيئة مستشفى الثورة العام – صنعاء
الشؤون الاكاديمية والتدريب
قسم البحوث والنشر

الشؤون الأكاديمية والتدريب

الاخ / مدير ادارة الاحصاء والسجل الطبي المحترم

تحية طيبة وبعد ،،،،

مرفق اليكم صورة من المذكرة الواردة إلينا من جامعة 21 سبتمبر للعلوم الطبية والتطبيقية يرجى الاطلاع والتكرم بالتعاون مع الطلبة في تسهيل جمع البيانات للبحث بعنوان:

Clinical Presentation Variant in Chronic Subdural Hematoma Patient in Al Thawra Modern Hospital in Sana`a City, Yemen

وذلك لمدة اسبوعين ابتدأ من 23 /2022/10م.

وتقبلوا خالص التقدير،،،

رئيس قسم البحوث والنشر
د/عبد الرحمن الحرازي

نائب المدير العام للشؤون الاكاديمية والتدريب
د/محمد الشهاري

الجمهورية اليمنية
وزارة التعليم العالي والبحث العلمي
جامعة ٢١ سبتمبر للعلوم الطبية والتطبيقية
كلية الطب البشري

انماط الاعراض السريرية لدى مرضى النزيف المزمن تحت الام الجافيه في هيئة مستشفى الثوره العام النموذجي مدينة صنعاء ، اليمن

فريـــق البحث (المجموعــة A1b)

احمد علي احمد الغانمي

امين قايد محمد فارع

شكري بسطام احمد الشيباني

عبدالحميد محمد البهواني

عبير مطهر يحيى الحسني

عزالدين شرف علي الصلوي

عمر علي هزام الفرح

محمد سعيد السالمي

مرام حميد البحم

نادر محمود عبده احمد

نسرين نصر محمد المصري

مشرفي البحث

أم.د أحـــمد حمـــود الشاحـــذي

استاذ مساعد طب المجتمع

أ.د مجاهد معصار

استاذ جراحة المخ والأعصاب

أ.د إسماعيل الحوثي

استاذ مشارك جراحة المخ والأعصاب

٢٠٢٢ـ١٤٤٤

الخلاصة

الخلفية: النزيف الدموي المزمن تحت الام الجافية هو حالة شـــائعة يتم مواجهتها في مجال جراحة المخ والأعصـــاب وغالبًا ما تؤثر على الأشخاص المسنين اكثر من غيرهم. يوجد القليل من الدراسات في الشرق الأوسط على خصائص هذا المرض. وتهدف هذه الدراسة الى تقييم الأعراض السريرية المختلفة بين مرضى النزيف المزمن تحت الأم الجافية.

منهجية الدراسة: دراسة وصفية رجعية ضمت بيانات ١١٣مريضا تم تشخيصه في مستشفى الثورة العام الحديث من ١ يناير ٢٠١٧ إلى ٣٠نوفمبر ٢٠٢٢. تم جمع البيانات من ملفات أرشـــيف المرضـــى وتحليلها فيما يتعلق بالاعراض الســريرية لكل مريض ، مقياس غلاســكو للغيبوبة عند الدخول ، المســببات، الأمراض المزمنة المصــاحبة، المعالجة السريرية والنتائج.

النتائج: كان متوسـط عمر المرضـى المتأثرين بـــنزيف تحت الام الجافية المزمن ما يقارب ٦١,٨ عامًا ، حيث أن (٧٧,٩٪) من المرضـــى كانوا من الذكور. كانت الأعراض الحركية (٧٩,٦٪) هي الأعراض الأكثر شـــيوعًا.تتبع باعراض ارتفاع الضـــغط القحفي (٥٤,٠٪) ومســـتوى اضـــطراب الوعي (٤٦,٠٪). مقياس غلاســكو للغيبوبة عند الدخول كان ١٥ في (٥٤ ٪) من المرضـــى ، ١٤-١٣ في (٣٠,١٪) ، ١٢-٩ في (١٢,٤٪) وأقل من ٩ في (٣,٥٪) من المرضـــى. أكثر الأمراض المزمنة المصـــاحبة للنزيف المزمن تحت الام الجافية كانت ارتفاع ضـــغط الدم (٢٥,٧٪) والميل للنزيف (١٢,٤٪). وجد النزيف المزمن تحت الأم الجافية في جهتين بالرأس في (٢٢,١٪) من المرضى. ٥١ مريضا (٤٥,١٪) لم يكن لديهم سبب موثق للورم الدموي ، في حين أن ٣٤ مريضا (٣٠,١٪) كان لديهم تاريخ مرضـي حادث سـقوط ، و ١٩ مريضـا (١٦,٨٪) لديهم حوادث سـير مسـبقا. تم إجراء "نزح بر-هول" لحوالي (٩٢,٩٪) من المرضى ، و (٩٦,٥٪) تحسنوا بعد هذا الاجراء.

الاســتنتاج: كان معظم المرضـــى المصـــابين بنزيف دموي مزمن تحت الام الجافية من الذكور المســنين. والأعراض الحركية كانت العرض الأكثر شيوعًا ، تليها أعراض ارتفاع الضـغط القحفي و اضـطراب مستوى الوعي. كان ارتفاع ضـغط الدم والميل للنزيف أكثر الامراض المزمنه شـيوعًا في المرضـى. تمت معالجة معظم المرضـى بإجراء "نزح بر-هول" وأظهر معظم المرضى تحسنًا بعد العلاج.

الكلمات المفتاحية: عرض سريري، نزيف دموي مزمن تحت الام الجافية، مدينة صنعاء، اليمن .