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Research Article

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Prevalence, Severity, and Predictors of Dysphagia among Patients with Acute Stroke in Thi-Qar, Iraq

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Abstract: Dysphagia constitutes a complication of acute stroke, with incidence rates ranging from 25% to 60%. The complex swallowing process encompasses oral preparation, oral transport, and the pharyngeal and esophageal phases. The present study population is comprised of 266 stroke patients who were admitted to various hospitals in Thi-Qar, Iraq, from June 2020 to June 2022 and from 2024. The age range of patients in this study was from 20 to 60 years, with patients younger than 20 years and those with previous swallowing dysfunction excluded. Informed consent was obtained from all patients and their families. Patients' age, gender, body mass index, smoking history, and medical history (hypertension, diabetes, coronary heart disease, and stroke history) were collected. The stroke severity scale, according to NIHSS, was also evaluated. In addition to the direct swallowing test, which is performed based on food characteristics, in order of paste, liquid, and solid food, with a maximum of five points allocated for each category, the swallowing status of the patient was observed, with particular attention paid to the occurrence of coughing, drooling, or changes in voice. This information was then recorded. The total score possible for the test is 20 points, and a total score of ≤9 points is considered to indicate a swallowing disorder. Dysphagia currently impacts a substantial portion for stroke patients as well as may had a large impact on overall clinical outcomes and mortality.

Keywords: Dysphagia; Acute stroke; Severity; Complications; and Quality of Life Questionnaire.

INTRODUCTION

Approximately 50% of patients with acute cerebrovascular disease (CVD) have dysphagia (Martino, R. *et al*., 2005; González-Fernández, M. *et al*., 2013; Paciaroni, M. *et al*., 2004). The studies that support this report incidences of post-stroke dysphagia (IPD) that varies considerably between 19% and 81%. The lack of uniformity in the data results from the diversity of criteria used to define dysphagia and the time elapsed between the onset of CVD and evaluation (Smithard, D.G. *et al*., 2007; Smithard, D.G. *et al*., 1996; Altman, K.W. *et al*., 2010; Carandang, R. *et al*., 2006; Lee, S. *et al*.; Fang, M.C. *et al*., 2014).

Of the patients who survive, about 70% of IPD cases resolve gradually over the course of the first week (Tatu, L. *et al*., 1998; Smithard, D.G. *et al*., 1996; Altman, K.W. *et al*., 2010; Bogousslavsky, J. *et al*., 1988). However, dysphagia is a marker of poor prognosis: compared to patients without dysphagia, those who present with it have significant increases in the rates of pneumonia, malnutrition, dehydration, length of hospital stay, disability, costs of care, institutionalization at discharge, and mortality (Paciaroni, M. *et al*., 2004; Fang, M.C. *et al*., 2014; Brott, T. *et al*., 1989; Van Swieten, J.C. *et al*., 1988; Smithard, D.G. *et al*., 1996; Lee, S. *et al*.; Garner, J.S. *et al*., 1988).

The available evidence on the management of IPD is limited and contradictory; current interventions have doubtful efficacy in increasing survival, preventing complications, and obtaining a better functional outcome (Trapl, M. *et al*., 2007). Some studies have suggested that the implementation of a mandatory protocol of early detection and treatment of dysphagia would improve the prognosis of affected people to some extent (Crary, M.A. *et al*., 2005; Mann, G. *et al*., 2000; Palli, C. *et al*., 2017; Rofes, L. *et al*., 2018; Sherman, V. *et al*., 2021).

PATIENTS AND METHODS

I. Study Design

We conducted a cross-sectional study of stroke patients with dysphagia, which included 266 patients whose ages ranged from 20 to 60 years during the follow-up period that lasted a full year, which ranged from June 2023 to June 2024 and included only patients who were enrolled in different hospitals in Thi Qar, Iraq. All patients underwent a set of questionnaires and measurements for patients in terms of the severity and prevalence of dysphagia, as well as the severity of stroke and the extent of the impact of dysphagia on patients' quality of life and general health.

II. Inclusion and exclusion parameters

This study included both:

1) Patients aged 20-60 years.
2) Patients who smoke.
3) Patients who suffer from severe obesity.
4) Patients with a previous history of stroke, as well as only patients with acute stroke.

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5) Patients with other comorbidities (hypertension, diabetes, coronary heart disease, high cholesterol, atrial fibrillation, and history of stroke).

This study also excluded:
1) Patients who had undergone previous surgeries.
2) Pregnant patients.
3) Patients aged less than 20 years and older than 60 years.
4) Patients with anemia, thyroid disease, or cancer.
5) Patients with osteoporosis.

Demographic and diagnostic data and parameters were recorded for 266 patients of both sexes, male patients at a rate of 66.54% and female patients at a rate of 33.46%, where the parameters included age, gender, and body mass index, medical history of the disease, smoking, comorbidities, and educational, social, and economic aspects of the family. All patient data were analyzed and distributed using SPSS program 22.0.

III. Diagnostic Tests for Patients

A questionnaire was administered to 266 stroke patients. We recorded the symptoms that were observed in all patients and were recorded in this study. The prevalence and severity of dysphagia that affected all patients was recorded, which is called the Dysphagia Outcome Scale and Severity (DOSS). It is a 7-point rating scale, having a score of 1 indicating a severe swallow dysfunction along with oral intake level, whereas a score of 7 represents a normal swallow function as well as oral intake. As for stroke indicators, it was shown that 17.29% of patients suffered from pneumonia. Stroke severity and prevalence in patients was classified as moderate (CNS score >4 to ≤7), severe (CNS score ≤4), or mild (CNS score >7). In addition, hospital clinical data were recorded, which identified the physical disability of the patients and classified them into no major disability, mild disability, moderate disability, moderate disability, and severe disability. Hospital data were determined from admission to intensive care which recorded the length of hospital stay, mortality rates, and disability. Also, a questionnaire was conducted for the general health of the patients, and the quality of life was rated on a scale of 0-100, where 0 represents the lowest score, which shows low levels of quality of life of the patients, and 100 represents the highest score which shows improvement in the patients.

RESULTS

In **Table 1**, we found that almost a group with ages (41 – 50) years had 52.63%, where males were 66.54% and females were 33.46%. Basics characteristics shown that 20.30% of patients had a stroke by medical history, and 37.22% was smokers. In addition, we noticed that 30.08% had hypertension, 19.17% had hypercholesterolemia, and 18.42% had a stroke history.

Table 1: Basics characteristics of patients 266 stroke patients.

Categories	Variables	No. of Patients [266]	Percentage, %
Age, [year]			
	20 – 30	56	21.05%
	31 – 40	70	26.32%
	41 – 50	140	52.63%
Gender			
	Female	89	33.46%
	Male	177	66.54%
Body mass index, [kg/m2]			
	Normal weight	36	13.53%
	Overweight	100	37.59%
	Obesity	130	48.87%
Medical history			
	Absent	54	20.30%
	Present	212	79.70%
Current Smoking			
	Yes	99	37.22%
	No	167	62.78%
Comorbidity			
	Hypertension	80	30.08%
	Diabetes	42	15.79%
	Coronary heart disease	14	5.26%

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	Hypercholesterolemia	51	19.17%
	Atrial fibrillation	30	11.28%
	Stroke history	49	18.42%
Education status			
	Primary	68	25.56%
	Secondary	80	30.08%
	University	118	44.36%
Socioeconomic status			
	Low	120	45.11%
	Moderate	76	28.57%
	High	70	26.32%

In **Table 2**, it enrolled symptoms data and severity prevalence into all patients. We found drooling with 27.82% and hoarseness with 23.31%. Also, it could be notable to enroll dysphagia severity, where sever degree of 81.20%, which injured all patients had acute stroke of 69.92%, where almost common reason was pneumonia with 17.29%.

Table 2: Distribution of examination outcomes upon patients

Categories	Variables	No. of patients {266}	%
Dysphagia			
	Symptoms		
	Pain during swallowing	44	16.54%
	Feeling as if food is stuck in the throat or chest or behind the breastbone	31	11.65%
	Drooling	74	27.82%
	Hoarseness	62	23.31%
	Regurgitation	18	6.77%
	Frequent heartburn	15	5.64%
	Stomach acid backing up into the throat	22	8.27%
	Dysphagia severity		
	No, 0	0	0%
	Mild, 5 - 7	11	4.14%
	Moderate, 2 - 4	39	14.66%
	Severe, 1	216	81.20%
Stroke			
	Stroke-associated pneumonia		
	Yes	46	17.29%
	No	220	82.71%
	Stroke severity		
	Mild (CNS >7)	22	8.27%
	Moderate (CNS >4 to ≤7)	58	21.80%
	Severe (CNS ≤4)	186	69.92%

This study also had enrolled adverse factors found in **Table 3**, where it almost cardiac arrest of 20.68% out of 65.41%, where the variables shown in hospital data. Furthermore, it classified disability degrees at patients in post-stroke, of which 41.35% had a moderate disability.

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Table 3: Enroll the clinical findings of stroke patients who suffer of dysphagia

Variables	No. of patients {266}	Percentage, %
Neurological worsening	7	2.63%
Seizure	5	1.88%
Cardiac arrest	55	20.68%
Decubitus ulcer	20	7.52%
Pneumonia	38	14.29%
Depression	14	5.26%
Deep vein thrombosis	17	6.39%
Myocardial infarction	12	4.51%
Gastrointestinal hemorrhage	6	2.26%
Total	174	65.41%

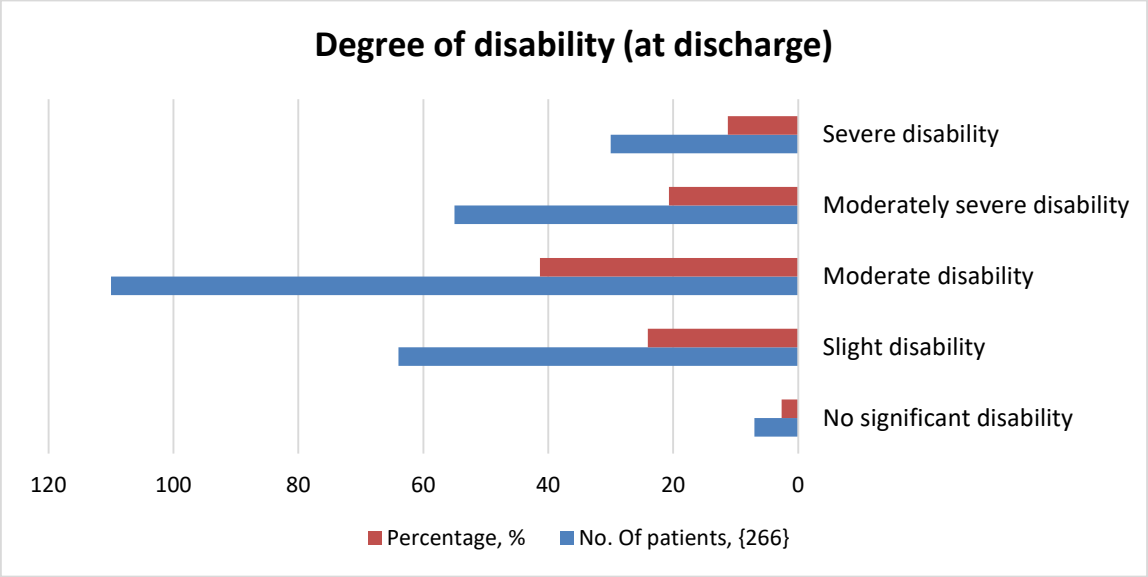

Figure 1: Determining degree of disability at patients with strokes

Table 4: Identifying hospitalization outcomes of patients

Categories	Items	No. of patients {266}	%
Length of hospital stay			
	Low or equal than 4 days	73	27.44%
	Above than 4 days	193	72.56%
Death status			
	Died in hospital	24	9.02%
	30-day mortality	20	7.52%
	1-year mortality	10	3.76%
Total		54	20.30%
Reason for death			
	Pneumonia	11	4.14%
	Multiorgan failure	7	2.63%
	Heart attack	21	7.89%
	Hemorrhage extension	16	6.02%

Moreover, 72.56% of patients were admission into the hospital within the above 4-day period, where the mortality rate got 20.30%, and 24 cases were died in the hospital. The most common death reason was heart attach of 7.89% and hemorrhage extension of 6.02%.

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Table 5: Evaluation of general health quality–life of patients during follow–up duration

Items	QOL, scale
Physical aspect	57.31 ± 12.80
Psychological aspect	64.22 ± 8.02
Social and emotional aspects	47.68 ± 11.90
Daily activity	51.18 ± 14.27
❖ A quality-of-life questionnaire ranges among between 0 – 100, where 0 indicates a drop in general health quality of life, while 100 indicates an enhancement in health quality of life.	

DISCUSSION

Consistent with a number of different studies (Meng *et al*., 2020; Lal *et al*., 2022), the study's first conclusion shows a substantial positive correlation between post-stroke dysphagia along with an elevated risk of pneumonia. Poor oral hygiene, immobility, as well as advanced age may have contributed to the incidence of stroke-associated pneumonia in our study. According to the most recent statistics (Marin *et al*., 2020; Feng *et al*., 2019), cardiac arrest was 20.68% and pneumonia was 14.29%.

Clinical procedures that prioritize early diagnosis and therapy may be accountable for this decreased incidence, which could change results and considerably lessen the likelihood of pneumonia among this population. Therefore, reducing the likelihood of stroke-associated pneumonia requires early dysphagia assessment and therapy (Hota *et al*., 2021).

The use of NGT upon admission was associated with dysphagia after a stroke, according to another notable finding from some studies (Souza *et al*., 2020; Moghadam *et al*., 2014; Finniss *et al*., 2022). Additionally, our research revealed that stroke patients having dysphagia had a significant disability rate, as demonstrated by a higher mRS score. We found that 11.28% of patients had severe impairment, while approximately 41.35% had intermediate disability.

According to similar findings, stroke patients who had pneumonia had lower impairment ratings at discharge; 88.4% of these patients had a disability score of 4 or above. As a result, dysphagia is related to a high likelihood of negative outcomes (Ho *et al*., 2018).

According to another investigation (Perry *et al*., 2019), a longer hospital stay following a stroke was significantly associated with dysphagia. In particular, stroke patients having dysphagia were more likely compared to their non-dysphagic counterparts to stay in the hospital for a longer period due to consequences like pneumonia from the stroke and/or greater impairment. This result is in line with a lot of studies.

However, other studies found no correlation between the duration of hospital stay and post-stroke dysphagia, with an identical duration of admission for both dysphagic as well as non-dysphagic groups. For those suffering from post-stroke dysphagia, rigorous rehabilitation therapy is crucial to accelerating recovery and raising the general quality of life. Dysphagia following a stroke was found to be a major risk factor for higher mortality in our study. Stroke is the third most common cause of mortality in Iraq, after diabetes mellitus and coronary heart disease. To our knowledge, no previous study has examined the death rate directly linked to post-stroke dysphagia (Teuschl *et al*., 2018; Deribe & Busi, 2018). Our study's in-hospital mortality incidence was 20.30 percent, which is somewhat lower than the rates for dysphagic stroke patients that were reported in other studies, which varied from 6.1% to 20%.

CONCLUSIONS

In Iraq, dysphagia is common among acute stroke patients and has an important impact on post-stroke outcomes, including extended hospitalization, higher mortality, increased impairment, and the requirement for nasogastric tube implantation, along with to the prevalence of stroke-related pneumonia. The significance of multidisciplinary care teams and routine dysphagia screening for acute stroke patients is emphasized by this study.

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