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Association between dietary pickle intake and stroke: A case control study

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SUMMARY

Pickles are a salty, oily food item which form a regular part of Indian diets. Both high salt and high fat diet are risk factors for stroke. We studied 112 stroke patients and 100 non afflicted controls regarding their dietary pickle ingestion as a case control study. The percentage of pickle exposure was similar in stroke patients and controls. (63.4% vs 56%, $p = 0.27$). The quantity of pickle intake per day was more in stroke patients than in controls. $p = 0.008$. However, the mean number of years of pickle intake was lower in stroke patients than in controls. (18.7 vs 24.2), $p = 0.02$. Hence the relationship between pickle intake and stroke incidence is complicated. A large cohort study might elucidate the association.

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1. Introduction

Pickles are an important constituent of every day diet in most Indian cuisines. Salt and saturated oil are present in high quantities in pickles. Both high salt intake and saturated fat intake are known risk factors for stroke [1]. A Japanese study [2] suggested an increased risk of stroke due to ingestion of pickles. Considering these facts, we compared the risk of stroke in patients and controls consuming pickle in their diet.

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2. Methodology

This was a hospital based case control study conducted in the department of Neurology, Guntur Medical College, Guntur between Nov 2017 to Aug 2018. For the study, 112 stroke patients and 100 non afflicted controls were included after informed consent. Details of pickle ingestion were taken by oral questionnaire. Other relevant data collected [risk factors for stroke] included: Age, Sex, HTN, DM, Past CVA, CAD, PVD, Smoking, alcoholism, CKD, dyslipidemia, Metabolic syndrome, Obesity, COPD, family history, migraine, OCP, HRT [2]. Pickle data was collected with a questionnaire regarding the duration and quantity of pickle use in their diet in number of spoons taken per day (i.e. nearly 1 tsp = 20 gms).

3. Results

Comparing the stroke patients and the controls, our sample had a non confounding profile of the base line demographics (Table 1). Patients with stroke had higher percentage of a previous history of stroke and a family member with stroke (Table 2). The percentage of pickle exposure was similar in stroke patients and controls. (63.4% vs 56%, $p = 0.27$) Fig. 1. The quantity of pickle intake per day was more in stroke patients than in controls. $p = 0.008$. Fig. 2. The mean number of years of pickle intake was lower in stroke patients than in controls. (18.7 vs 24.2), $p = 0.02$. Fig. 3.

4. Discussion

Our study examining the association between pickle, a fatty, salty dietary item and stroke demonstrates a complicated relationship. The percentage of pickle eating subjects is similar in both the cases and controls, the stroke patients volunteered that they had the habit of taking more quantity of pickles in their diet, but these patients had comparatively less number of years of pickle intake compared to controls. The confounding of the results due to a higher proportion of a positive family

Table 1
Baseline demographic profile of stroke patients and controls.

Characteristic	Stroke patients [112]	Controls [100]	p value
Mean age [SD]	59.6 [11]	58.9 [10]	0.6
Mean abdominal circumference in cm [SD]	87.4 [14.2]	98.1 [15.6]	<0.001
Mean weight in Kg [SD]	67.8 [12]	67.1 [10.6]	0.67
Female	33%	37%	0.55
Uneducated	19.6%	53%	<0.001
Urban	25%	50%	<0.001
House wives	20.5%	48%	<0.001
Manual labor	43.8%	28%	<0.001
Professionals	31.2%	16%	<0.001

Table 2
Baseline risk factor comparison between stroke patients and controls.

Risk factor	Stroke patients [112]	Controls [100]	p value
Percentage of subjects with hypertension	42	33	0.2
Percentage of subjects with diabetes mellitus	43.8	31	0.06
Percentage of subjects with past CVA	38.4	14	<0.001
Smokers %	29.5	23	0.3
Alcoholic %	30.4	20	0.08
Chronic kidney disease %	11.6	7	0.2
Percentage of subjects with dyslipidemia	20.5	14.1	0.2
Obesity %	6.2	3	0.3
COPD %	17	13	0.4
Percentage of subjects with CVA family history	20.5	12	0.01
Percentage of subjects with peripheral vascular disease	7.1	4	0.3

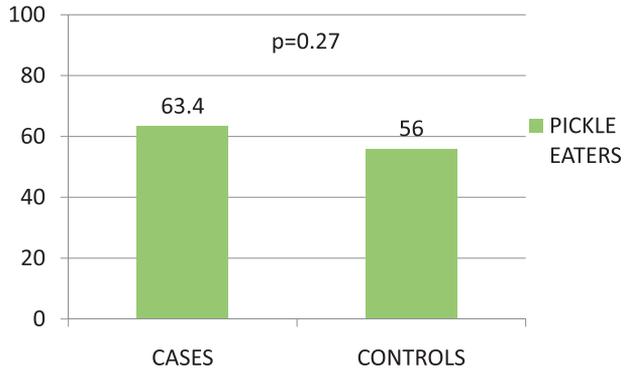


Fig. 1. Percentage of pickle exposure in stroke patients and controls.

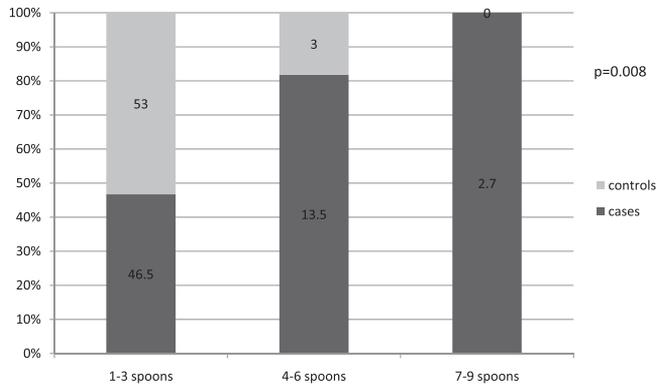


Fig. 2. Quantitative comparison of pickle intake in cases and controls.

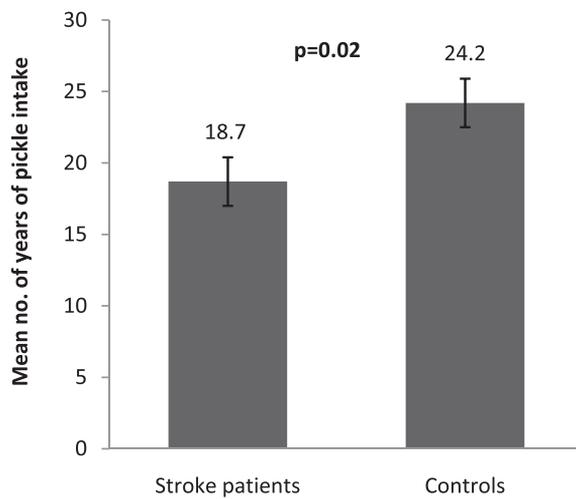


Fig. 3. Comparison of mean number of years of pickle intake between stroke patients and controls.

history of stroke and a previous stroke in the cases may have affected our study. So does the small sample size. Therefore a large scale community based cohort study can show a better picture.

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Conflicts of interest

The authors declare no conflict of interest.

Author contributions

SA was responsible for designing the study protocol, writing the protocol, conducting the research, analysing the data, interpreting results and preparing the manuscript.

AK was responsible for conducting the research and analysing the data.

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