**INTRODUCTION**

Idiopathic intracranial hypertension (IIH) has been linked to spontaneous cerebrospinal fluid (CSF) leaks, empty sella syndrome, and obesity with elevated body mass index (BMI)\(^2\). In addition to empty sella syndrome, some patients with IIH also develop bony sellar expansion\(^4,5\). The sella is a weak point in the skull base and the effects of the constant elevated pressure against the sellar bone results in bony remodeling and expansion, as is commonly seen in patients with pituitary macroadenomas and other sellar neoplasms\(^6\). Common sites of spontaneous CSF leaks represent other weak areas of the skull base and include the tegmen and the cribriform plate.

Additionally, a direct relationship between CSF pressure and BMI has been seen in some studies\(^7,8\). In this cross-sectional study we aim to define the relationship between BMI and depth of the olfactory fossa, with the assumption that BMI and CSF pressure are positively correlated, to determine the presence of an association between obesity and depth of the olfactory fossa.

**METHODS AND MATERIALS**

Patients evaluated by the senior author are enrolled in a prospectively collected database. Data was extracted from this database to include demographic data and BMI. Olfactory fossa depth was measured on coronal computed tomography imaging obtained in temporal proximity to the BMI measurement.

**RESULTS**

Two hundred and twelve patients were included in the study. There were 104 males and 108 females. The prevalence of each Keros classification on the right side within the cohort were 24%, 57%, and 19% for Keros type 1 (1-3.9mm), 2 (4-7mm) and 3 (7+mm), respectively, with similar findings on the contralateral side. Differences in olfactory fossa depth between sides did not meet statistical significance. Males did have a deeper olfactory fossa than women both on the right (5.96mm, 4.99mm, p<0.00036) and the left (6mm, 5.03mm, p<0.0004). Women (mean=31.8, SD=10.16) had a significantly higher BMI than men (mean=28.4, SD=5.73, p<0.036).

The Pearson correlation was run to determine the relationship between BMI and olfactory fossa depth in the cohort and showed no positive correlation (R=0.18, N=212, p=0.0072 on the right, R=0.24, N=212,p=0.00035 on the left). When run separately, the null hypothesis of no correlation was accepted in males (R=0.09, N=104, p=0.33 on the right, R=0.15, N=104, p=0.12 on the left), but found a weak positive correlation in females (R=0.306, N=108, p=0.0013 on the right (R=0.364, N=108, p=0.0001 on the left).

**CONCLUSIONS**

The data herein show a weak correlation between BMI and olfactory fossa depth in women only.

**REFERENCES**


