



Is central compartment phenotype of CRSwNP equal to type 2 endotype?

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ABSTRACT

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INTRODUCTION

Chronic rhinosinusitis with nasal polyp (CRSwNP) and central compartment allergic disease (CCAD) are classified as endotype type 2 dominance according to EPOS 2020. The percentage of type 2 in patients with CRSwNP may up to 80-90 % in many papers, and by definition, CCAD should also strongly connect to type 2 endotype. However, Asia patients with CRSwNP are found having more non-type 2 than Caucasian patients. It is not sure if this phenomenon is similar in central compartment of CRSwNP. In this study, we want to clarify the endotype character of patients with central compartment polyps in Taiwan.

METHODS AND MATERIALS

Patients received sinus surgery at single tertiary medical center of south Taiwan from 2021 October to 2024 September were enrolled. Tumors, mucocele, fungal infection and antrochoanal polyp were excluded from analysis. Central compartment type of CRSwNP was judged by computer tomography (CT) and surgical findings. The CT finding of CCAD typically demonstrate polypoid changes in the central compartment of the nasal cavity, including the middle turbinate, the superior turbinate, and the posterior-superior nasal septum. In most of cases, mucosa of ethmoid sinuses also have polypoid change. Non-type 2 endotype was decided by serum IgE <89 IU/mL and Phadiotop < class 2.



Figure 1. typical finding of central compartment atopic disease at CT scan.

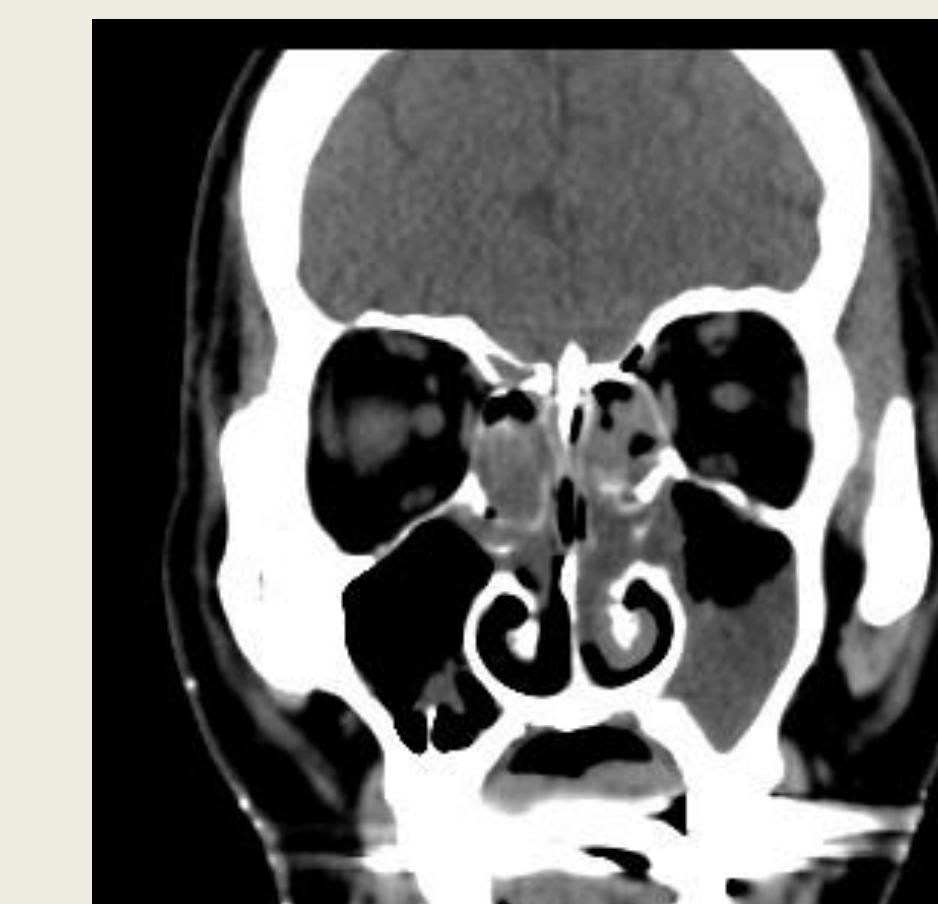


Figure 2. broad definition of CCAD at CT scan.

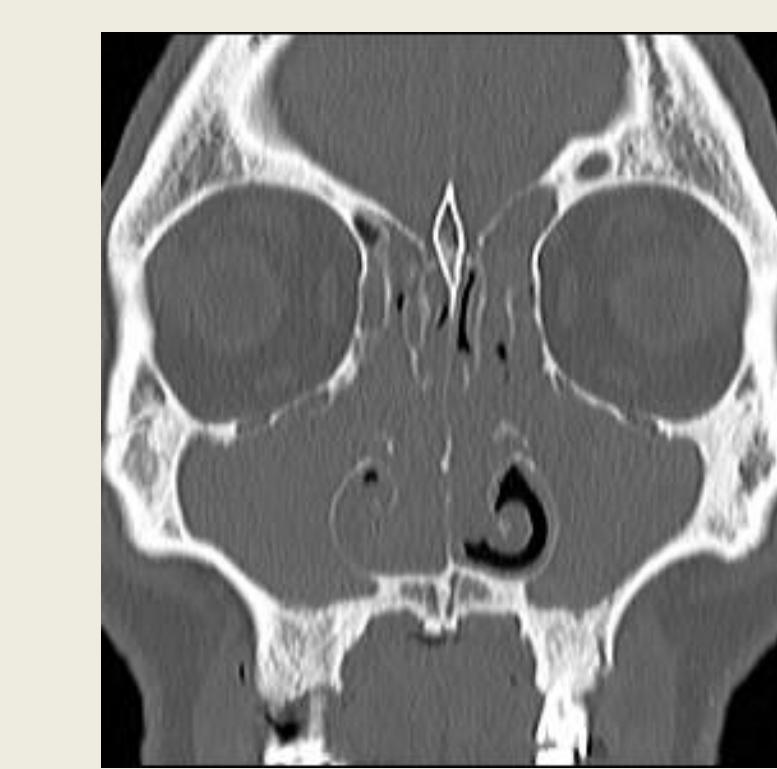


Figure 3. non-CCAD type of CRSwNP by Ct scan

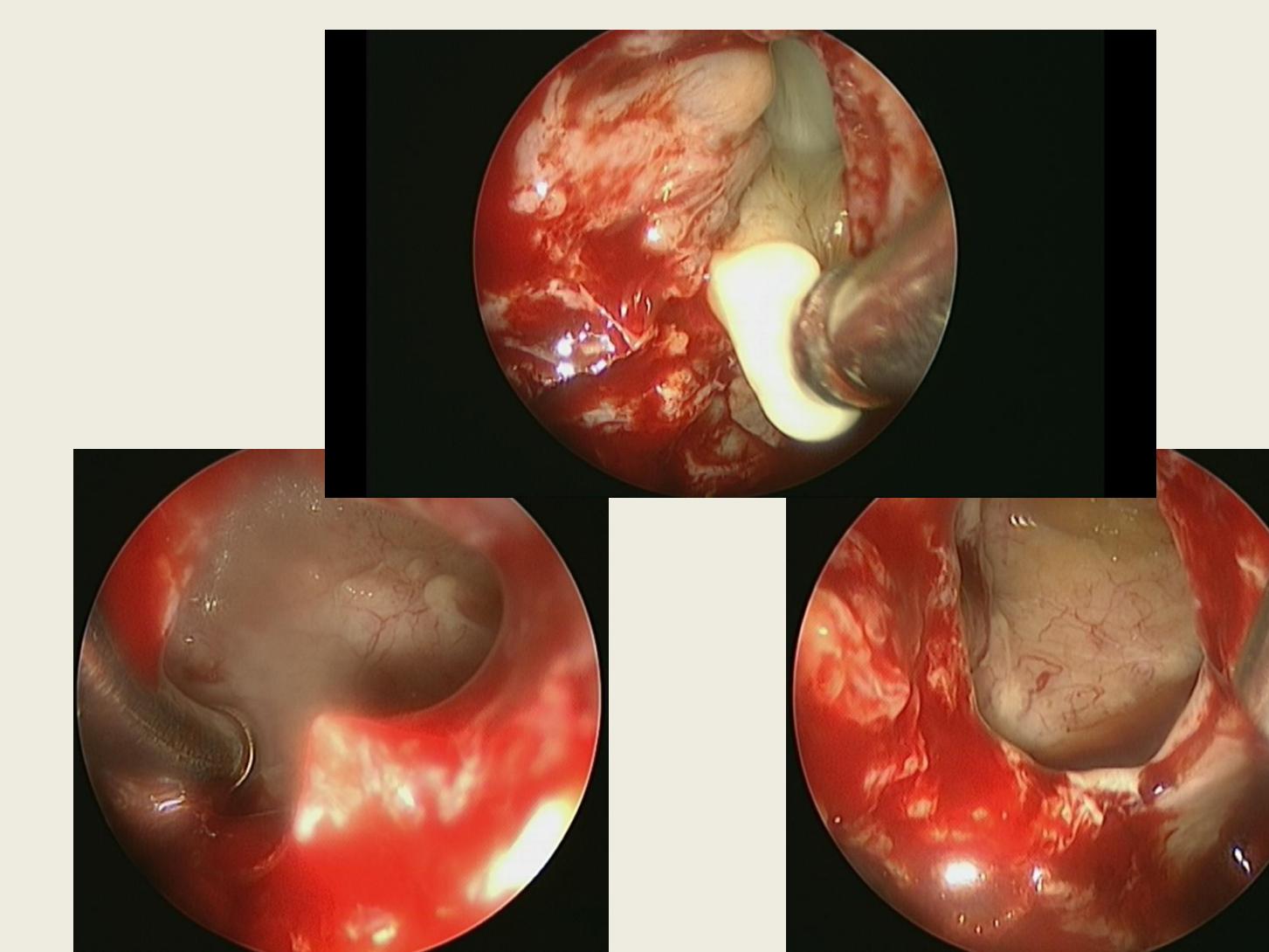


Figure 4 during surgery, pus was obstructed in the maxilla due to ethmoid polyps.

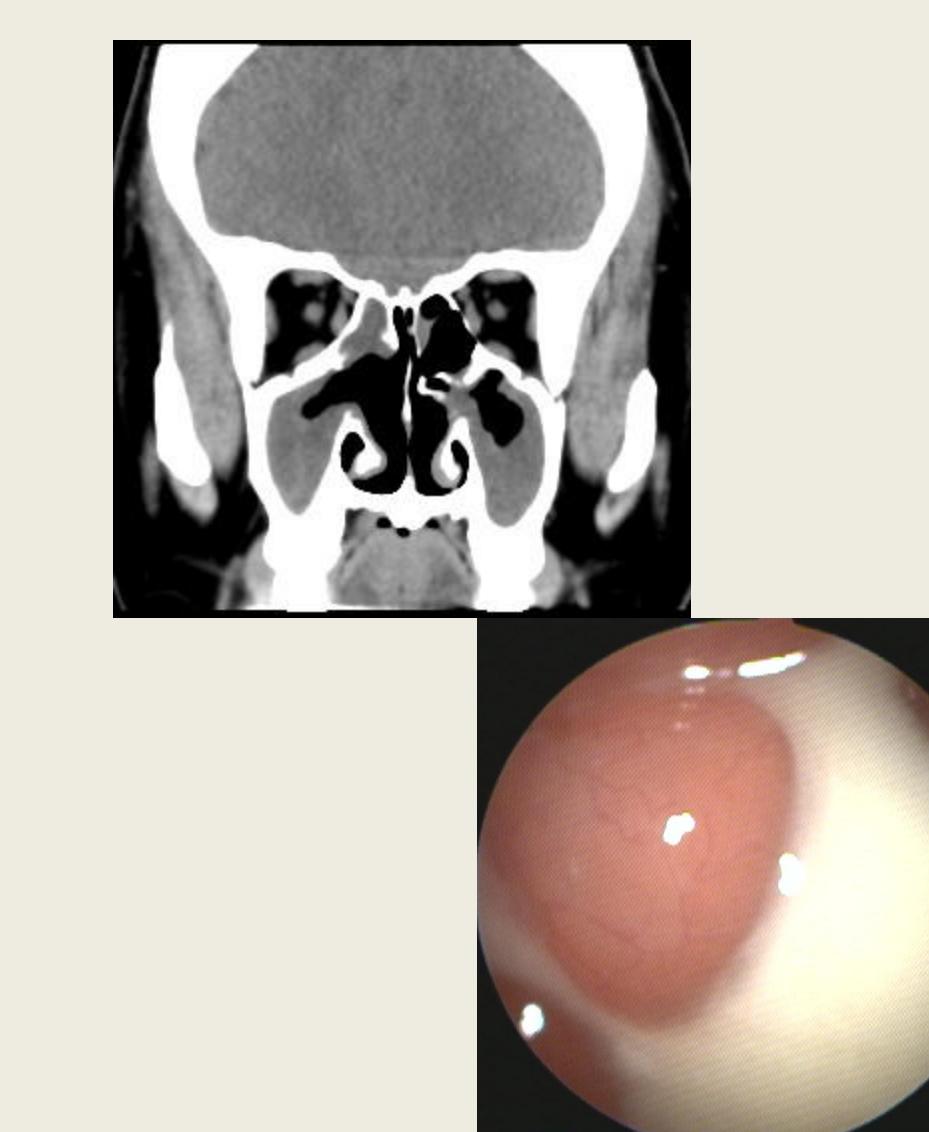


Table 1. Label in 24pt Arial.

RESULTS

There are 398 patients received sinusitis surgeries at Kaohsiung medical university hospital in 3 years. After excluded fungal infection and antrochoanal polyp, 113 patients (57 male, 56 females, mean age 49.5 years old) with CRSsNP and 210 patients (144 male, 66 females, mean age 47.5 years old) with CRSwNP were analyzed. Among patients with CRSwNP, 104 patients (49.5% of all CRSwNP) showed non-type 2 endotype. Among patients with CRSwNP, 100 patients (63 male, 37 female, mean age 50.1 years old) were classified as central compartment type. Fifty-five (55%) subjects of central compartment type were belonged to non-type 2. Forty-five (45%) subjects were type 2.

| | CRSsNP | CRSwNP | Central compartment |
|----------------|--------|--------|---------------------|
| patients | 113 | 210 | 100 |
| male | 57 | 144 | 63 |
| female | 56 | 66 | 37 |
| M/F | 1.0 | 2.2 | 1.6 |
| Mean age, y/o | 49.5 | 47.5 | 50.1 |
| Non-allergic % | 61.1 | 49.5 | 55 |

Chart 1. Label in 24pt Arial.

DISCUSSION

CCAD, either Central Compartment **Allergic** Disease or Central Compartment **Atopic** Disease, is a subtype of chronic rhinosinusitis with nasal polyps (CRSwNP) that was first described in 2014 by Dr. DeYoung. By definition, CCAD is defined as a form of type-2 inflammation-driven chronic rhinosinusitis in which nasal polyps and mucosal disease are primarily localized to the central compartment of the nasal cavity — that is, the middle turbinate, superior turbinate, and posterior nasal septum.

CONCLUSIONS

Biologics are considered to be an option for patients with recurrent or recalcitrant CRSwNP and CCAD, for their endotype character of type 2 dominance. However, in this study, we found considerable portion of CRSwNP and the central compartment type of nasal polyps belonging to non-type 2, with 49.5% and 55% respectively. Patients in Taiwan or Asia should be carefully examined before receiving biologics treatment.

REFERENCES

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