Orbital and Intracranial Complication following an Acute Rhinosinusitis; a Case Report

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SUMMARY
We report a case of a young adult patient who primarily revealed symptoms of orbitocellulitis as complication of odontogenous acute rhinosinusitis. Rhinosinusitis is generally classified as acute if symptoms last for less than 4 weeks, chronic if longer. Pathological findings (incl. CT of paranasal sinuses and orbit) and therapeutical measures (incl. FESS-drainage of maxillary sinus, putrid tooth extraction, antibiotics) were undertaken to manage the disease immediately after stationary admission. Two weeks after inconspicuous healing period a hemiparesis due to an intracranial empyema formation developed.

The consecutive orbital and intracranial complications of an acute rhinosinusitis are rare but must be mutually excluded in a complicated rhinosinusitis even when proper surgical and medical treatment tend to efficient healing of orbital complication. The correct indication of imaging methods, the evaluation of diminutive symptoms and the role of underlying mechanisms of intracranial abscess formation is discussed. Review of literature concerning orbital and intracranial complications coincidence is stated.

Discussion
Coincidence of orbital and intracranial complication of acute rhinosinusitis - described very marginally in the literature; orbital or intracranial complication separately, many of studies includes acute and chronic rhinosinusitis together and majority of them focus on children’s population.

Distribution of rhinosinusitis complications upon demographic aspect:
- 2 of 24 young adult patients (8.3%) suffered from subsequent symptoms associated with intracranial complications typical for the orbitocellulitis /North America/ (1)
- 3 of 15 patients (20%) with intracranial complications of rhinosinusitis had additional subperiosteal abscess formation in the orbit /North America/ (2)
- 4 cases of intracranial complications among 24 pediatric patients (5.4%) who were admitted for orbital infection /North America/ (3)
- only 1 of 52 patients (1.9%) with orbital cellulitis/orbital abscess subsequently developed an intracranial complication (meningitis) /Australia/ (4).
- 47 of 90 patients admitted with severe rhinosinusitis/52% suffered from orbitocellulites, in 10 of 47 (19%) orbitocellulites patients a subsequent intracranial complication developed /West Africa/ (5).
- Distribution of complications in 59 patients (children and young adults with complicated intracranial complications: 16 (27%), orbital 13 (22%) and both intra-cranial and orbital 10 patients /North America/ (6)
- 9 patients of 116 (8%) (predisposing rhinosinusitis and trauma) developed an orbital abscess and an intracranial complication (Middle East) (7)
- 25 patients with complicated rhinosinusitis: 20 (80%) patients with orbital complications; 3 (12%) with intracranial complications; and 2 (8%) with both orbital and intracranial complications /Europe/ (8).

Conclusion
The diagnostic and therapeutical management of orbital complications of rhinosinusitis has been fully established. Nevertheless, some patients, esp. young adults, suffer from subsequent intracranial complications. A co-existing/consequent intracranial complication affects this group of patients with orbital complications of rhinosinusitis in up to 20% of cases according to reviews of the scientific literature. That is probably due to the aggressiveness of the infection or spread via anatomical channels. Proper treatment measures may mask these predisposing factors, and therefore in general, if one of the complications appears, the others must be excluded.

We conclude treatment by performing a CT of the brain or MRI when an orbital complication has occurred following rhinosinusitis despite a negative brain pathology in CT scans of the orbit and paranasal sinuses and/or minimal or absent symptomatology before dimission.