Management of Orbital Cellulitis in Children: A Review of 465 Cases

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ABSTRACT

Objective: Orbital cellulitis (OC) represents a group of conditions ranging from periorbital inflammation to subperiosteal/orbital abscess (SPOA) and cavernous sinus thrombosis. Improvements in imaging studies and endoscopic techniques have led to continued controversies regarding the medical and surgical management of these. We sought to clarify by reviewing our experience with patients admitted to our institution with OC during a seven-year period.

Methods: 465 admissions with a diagnosis of OC were identified in a seven-year period. Charts were reviewed for presentation, radiologic evaluation, medical management, surgical treatment, and outcome.

Results: Of the 465 patients, 189 were treated in the emergency room and 276 were admitted to the hospital. CT scan was performed on 240 patients. Subperiosteal or orbital abscess was noted in 70 patients. Of these, 47 were treated medically and 23 had surgery. Surgery was performed endoscopically in 7 patients, open in 9 patients, through a combined approach in 6 patients, and was not documented in 1 case. Patients treated surgically were older (8.5 vs. 6.2 years, p = 0.018) and had a longer hospital course (11.3 vs. 6.6 days, p = 0.002) than those treated medically. WBC count on admission was similar between groups. Patients with large abscesses, defined as greater than 10mm, were more likely to require surgical intervention than patients with small abscesses (p < 0.001).

Conclusions: Small SPOA in younger children can successfully be treated medically while older patients with larger abscesses are more likely to require surgical intervention, in many cases through an open approach.

INTRODUCTION

Orbital cellulitis represents a group of conditions ranging from periorbital inflammation to subperiosteal/orbital abscess (SPOA) and cavernous sinus thrombosis. The Chandler classification system1 is widely used and places orbital cellulitis patients into five groups, which are described in Table 1. Orbital cellulitis most commonly occurs as a complication of acute sinusitis, accounting for 76% of cases2. If not treated adequately, orbital cellulitis can progress to cause intracranial complications, blindness, and even death. It is thought to occur by the spread of infection either by direct extension from the paranasal sinuses, pterygopapillae, via local thrombophlebitis, or by way of infected thrombomemboli3. Management has traditionally included intravenous antibiotics, nasal decongestants, and surgical drainage of discrete collections4,5. There have been continued discussions regarding the role of surgery for orbital cellulitis or small subperiosteal abscess as well as the role of endoscopy versus the traditional open approach5.6. We sought to clarify by reviewing our experience with patients admitted to our institution with orbital cellulitis during a seven-year period.

METHODS & MATERIALS

Institutional review board permission was obtained to conduct this retrospective study. Hospital records for the seven-year period from January 2000 to February 2007 were reviewed for patients with a diagnosis of orbital cellulitis (ICD9 code 376.01). 465 patients were identified. Charts were reviewed for presentation, radiologic evaluation, medical management, surgical treatment, and outcome. Clinical information gathered included white blood cell count and temperature on admission, age, gender, prior oral antibiotics, criteria for operative intervention included large abscess (subjective size determination), decrease in visual acuity or other concern on ophthalmologic exam, worsening clinical picture or failure to improve despite 24-48 hours of appropriate medical therapy2,7. The decision to use endoscopic, open, or combined approach was based on CT findings, abscess location, and attending judgment. No differences in outcome based on surgical approach versus traditional open approach7. While the exact role and timing of surgical intervention for SPOA remains controversial, it appears clear that many smaller abscesses in younger patients are amenable to medical treatment with close observation and serial imaging8-10. In our experience, patients who underwent surgical intervention had a significantly longer hospital stay than those patients treated medically, a finding that is supported in the literature4,11. As others have reported, our data suggest that younger patients more often present with less extensive disease and are more likely to be successfully treated medically4,11.12.

RESULTS

The majority of small (<10mm) SPOA in younger children can be successfully treated medically, while older patients with larger abscesses are more likely to require surgical intervention. Patients being treated medically require close observation and frequent examinations, with urgent surgical intervention for a worsening exam or a failure to improve with 24-48 hours of medical therapy.

DISCUSSION

While a strict management algorithm does not exist at our institution for this condition, patients were cared for in a standard fashion. Ophthalmologic consultation was obtained in all cases. Criteria for operative intervention included large abscess (subjective size determination), decrease in visual acuity or other concern on ophthalmologic exam, worsening clinical picture or failure to improve despite 24-48 hours of appropriate medical therapy2,7. The decision to use endoscopic, open, or combined approach was based on CT findings, abscess location, and attending judgment. No differences in outcome based on surgical approach versus traditional open approach7. While the exact role and timing of surgical intervention for SPOA remains controversial, it appears clear that many smaller abscesses in younger patients are amenable to medical treatment with close observation and serial imaging8-10. In our experience, patients who underwent surgical intervention had a significantly longer hospital stay than those patients treated medically, a finding that is supported in the literature4,11. As others have reported, our data suggest that younger patients more often present with less extensive disease and are more likely to be successfully treated medically4,11,12.

CONCLUSIONS

The majority of small (<10mm) SPOA in younger children can be successfully treated medically, while older patients with larger abscesses are more likely to require surgical intervention. Patients being treated medically require close observation and frequent examinations, with urgent surgical intervention for a worsening exam or a failure to improve with 24-48 hours of medical therapy.

REFERENCES