Epidemiological, Clinical, Therapeutic, and Outcome Profile of Pediatric Ear, Nose, and Throat Infectious Emergencies: A Retrospective Study of 53 Cases

Profil épidémiologique, clinique, thérapeutique et évolutif des urgences infectieuses oto-rhino-laryngologiques pédiatriques : étude rétrospective de 53 cas

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RÉSUMÉ

Contexte : Les urgences infectieuses oto-rhino-laryngologiques (ORL) pédiatriques sont à risque d'obstruction respiratoire supérieure et de complications sévères.

Objectif : Décrire le profil épidémiologique, clinique, radiologique, thérapeutique et évolutif de ces infections chez l'enfant.

Méthodes : Étude rétrospective descriptive menée sur deux ans (2024–2026) à l'Hôpital Universitaire de Ben Arous, incluant 53 enfants hospitalisés. Les variables qualitatives ont été exprimées en effectifs et pourcentages, et les variables quantitatives en moyennes.

Résultats : L'âge moyen était de 4 ans avec 58 % de garçons. La fièvre (94 %) et la tuméfaction cervicale (87 %) prédominaient. Les diagnostics les plus fréquents étaient l'adénophlegmon (23 %) et la cellulite périorbitaire (23 %), suivis de la cellulite orbitaire (11 %). L'imagerie (tomodensitométrie avec injection dans 64 % des cas) a révélé une cellulite diffuse (45 %) ou un abcès (43 %). Les hémocultures (réalisées dans 96 % des cas) n'ont isolé un germe que dans 4 cas (Staphylococcus aureus, n = 3 ; Streptococcus pneumoniae, n = 1). L'amoxicilline–acide clavulanique par voie intraveineuse à forte dose a constitué le traitement empirique principal (74 %). Un drainage chirurgical a été réalisé dans 11 % des cas. La durée moyenne d'hospitalisation était de 6 jours. Un décès par choc septique est survenu (2 %).

Conclusion : Dans cette série rétrospective de 53 enfants, l'évolution a été favorable chez 98 % des patients, la majorité (89 %) ayant été prise en charge par une antibiothérapie intraveineuse empirique sans drainage chirurgical ; un décès par choc septique a été observé.

Mots clés : Pédiatrie, Maladies oto-rhino-laryngologiques, Infections, Cellulite, Abcès, Cellulite orbitaire, Mastoïdite, Antibiothérapie

ABSTRACT

Background : Pediatric ear, nose, and throat (ENT) infectious emergencies present a risk of upper airway obstruction and severe local or systemic complications.

Objective : To describe the epidemiological, clinical, radiological, therapeutic, and evolutionary profile of these infections in children.

Methods : A two-year retrospective descriptive study (January 2024–January 2026) conducted at Ben Arous University Hospital, including 53 hospitalized children. Qualitative variables were expressed as numbers and percentages, and quantitative variables as means.

Results : The mean age was 4 years, with a male predominance (58%). Fever (94%) and painful neck swelling (87%) were the primary clinical features. The most frequent diagnoses were adenophlegmon (cervical lymphadenitis/abscess) (23%) and periorbital cellulitis (23%), followed by orbital cellulitis (11%). Imaging (contrast-enhanced computed tomography in 64% of cases) revealed diffuse cellulitis (45%) or organized abscess (43%). Blood cultures (96% of cases) isolated pathogens in only 4 cases (Staphylococcus aureus, n = 3; Streptococcus pneumoniae, n = 1). High-dose intravenous amoxicillin–clavulanic acid was the main empirical treatment (74%). Surgical drainage was required in 11% of cases. The mean hospital stay was 6 days, and one patient (2%) died from septic shock.

Conclusion : In this retrospective series of 53 children, the outcome was favorable in 98% of patients, most of whom (89%) were managed with empirical intravenous antibiotic therapy without surgical drainage; one patient died from septic shock.

Keywords : Pediatrics, Ear, nose, and throat diseases, Infections, Cellulitis, Abscess, Orbital cellulitis, Mastoiditis, Antibiotic therapy

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INTRODUCTION

Pediatric ear, nose, and throat (ENT) infectious emergencies represent a significant burden in emergency departments and pediatric wards [1-4]. These conditions encompass a broad spectrum of acute infections, including deep neck space and adenophlegmon-type infections (retropharyngeal, parapharyngeal, and submandibular involvement) [5-7], periorbital/orbital cellulitis [8], and acute mastoiditis [9]. Owing to the pliability of pediatric anatomical structures and the proximity of these regions to major neurovascular pathways, such infections are particularly concerning because of their potential for rapid progression. If left untreated or if treatment is delayed, they can culminate in life-threatening complications such as acute upper airway obstruction, intracranial extension (including cavernous sinus thrombosis, subdural empyema, and meningitis), or systemic sepsis [8,10,11].

Recent literature emphasizes evolving paradigms in management, moving away from immediate, aggressive surgical intervention toward a primary medical approach consisting of broad-spectrum intravenous antibiotic therapy and highly selective diagnostic imaging [9,10,12]. Accurate clinical characterization and an understanding of regional epidemiological and microbiological patterns are essential to optimize empirical protocols and reduce morbidity [13,14]. This study aimed to describe the epidemiological profile, clinical manifestations, radiological and microbiological findings, therapeutic management, and outcomes of children hospitalized for ENT infectious emergencies in our center.

MATERIALS AND METHODS

A retrospective, descriptive, monocentric study was conducted over a two-year period, from January 2024 to January 2026, within the Department of Pediatrics and Neonatology at Ben Arous University Hospital, Tunisia. We reviewed the medical records of all pediatric patients admitted via the emergency department for severe acute ENT infections.

Inclusion criteria comprised children aged 1 month to 15 years hospitalized for adenophlegmon and deep neck space infections (retropharyngeal, parapharyngeal, submandibular), periorbital and orbital infections (preseptal and postseptal cellulitis), acute mastoiditis, and other severe acute ENT soft-tissue infections (cervicofacial cellulitis, parotiditis, peritonsillar phlegmon, ethmoiditis). Exclusion criteria included patients with incomplete clinical records, recurrent infections secondary to known congenital anatomical malformations or cysts, and superficial localized skin infections.

Data collected systematically included demographic variables (age, sex), clinical signs at presentation, standard laboratory inflammatory markers (white blood cell count, C-reactive protein), microbiological sampling (blood cultures, purulent samples) and identified pathogens, diagnostic imaging findings (computed tomography [CT] or ultrasound) and their results, specific antibiotic regimens, surgical interventions, duration of hospital stay, and clinical outcomes. Diagnostic CT imaging of the neck or orbits was performed selectively, guided by severe clinical indicators such as respiratory distress, trismus, cranial nerve deficits, ophthalmoplegia, decreased visual acuity, or lack of clinical improvement after 48 hours of initial medical therapy; cervicofacial or orbital ultrasound was used as a first-line or alternative imaging modality in the remaining selected cases.

Of the 54 records initially screened, one was excluded for incomplete data, leaving 53 patients for final analysis; the denominator for a small number of individual variables with residual missing data is specified in the corresponding table.

Quantitative variables were expressed as means, and qualitative variables as numbers and percentages. Given the heterogeneity of the study population, which grouped several infectious entities with potentially different clinical presentations, management strategies, and outcomes, and given the small sample size with a marked imbalance between subgroups (for example, 6 patients who underwent surgical drainage versus 47 managed medically), the analysis was purely descriptive and no inferential comparisons were performed. Data were analyzed using Statistical Package for the Social Sciences (SPSS) software (version 26.0, IBM Corp.). This study adhered to local institutional ethical standards for retrospective chart reviews and followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) recommendations.

RESULTS

A total of 53 patients met the inclusion criteria during the study period. The cohort exhibited a mean age of 4.35 years, with a male predominance of 58% (male-to-female ratio of 1.41:1). Fever (temperature >38.5°C) was the most frequent presenting sign, documented in 94% of patients, followed by painful cervical swelling in 87%. On clinical examination, orbital and periorbital involvement was noted in 34% of the cohort (Table I).

Laboratory findings were available for 51 patients. The mean white blood cell count was 15670 × 10^9/L and the mean C-reactive protein level was 53 mg/L; 27 patients (52%) had a C-reactive protein level above 20 mg/L.

Anatomical distribution showed that adenophlegmon and periorbital cellulitis were the most frequent diagnoses, each accounting for 23% of cases (n = 12), followed by orbital cellulitis (11%, n = 6). Acute mastoiditis represented 6% of cases (n = 3), retropharyngeal/parapharyngeal abscess 4% (n = 2), and peritonsillar phlegmon 4% (n = 2); no case of epiglottitis was recorded. The remaining 30% of cases (n = 16) corresponded to a heterogeneous group of other severe ENT soft-tissue infections, predominantly isolated cervical adenitis (n = 4), cervicofacial or jugal cellulitis (n = 2), and parotiditis (n = 2), with a single case of mandibular cellulitis among others (Table I).

Diagnostic imaging was performed selectively: contrast-enhanced CT was obtained in 64% of patients, and cervicofacial or orbital ultrasound in the remaining 36% of selected cases. Among the 53 imaging results recorded (CT and ultrasound), the most common findings were diffuse cellulitis without a drainable collection (45%) and an organized abscess or fluid collection (43%); bone erosion was identified in 4% of cases, and no venous sinus thrombosis was observed. The remaining 25% of imaging findings were classified as other (including isolated adenitis, parotiditis, or cases in which no further imaging beyond clinical assessment was necessary) (Table II).

Table I. Demographic, Clinical Presentation, and Diagnostic Distribution of the Patient Cohort

Parameter / Diagnostic Entity	n	%
Demographics (N = 53)		
Mean age, years (range)	4.35 (—)	—
Male	31	58%
Female	22	42%
Clinical Presentation (N = 53)		
Fever (>38.5°C)	50	94%
Painful cervical swelling	46	87%
Orbital / periorbital involvement	18	34%
Anatomical & Diagnostic Distribution (n = 53)		
Periorbital (preseptal) cellulitis	12	23%
Orbital (postseptal) cellulitis	6	11%
Adenophlegmon	12	23%
Acute mastoiditis	3	6%
Retropharyngeal / parapharyngeal abscess	2	4%
Peritonsillar phlegmon	2	4%
Other (a) (cervicofacial cellulitis, isolated adenitis, parotiditis, etc.)	16	30%
Radiological Workup (N = 53)		
Contrast-enhanced computed tomography scan performed	34	64%
Cervicofacial / orbital ultrasound performed (b)	19	36%

aDetailed in Results text (isolated adenitis, cervicofacial/jugal cellulitis, parotiditis, mandibular cellulitis, and single cases of other soft-tissue infections). bUltrasound was used as the imaging modality in patients not undergoing computed tomography. n, number of patients; N, total number of patients. Percentages were rounded to the nearest whole number.

Microbiological sampling was performed extensively: blood cultures were obtained in 96% of patients, while purulent or surgical-site samples were collected in only 6% of cases, generally limited to patients undergoing surgical drainage. A causative pathogen was isolated in only 4 of the 53 cases (8%); Staphylococcus aureus accounted for 3 of these 4 isolates and Streptococcus pneumoniae for 1 (Table III).

Table II. Imaging Findings (Computed Tomography and Ultrasound)

Imaging finding (n = 53) (c)	n	%
Diffuse cellulitis (no collection)	24	45%
Organized abscess / fluid collection	23	43%
Bone erosion	2	4%
Otherd	13	25%

cPercentages calculated on the full cohort of imaged patients (N = 53), combining computed tomography and ultrasound results. dOther includes isolated adenitis, parotiditis on imaging, or cases without further imaging beyond clinical assessment. Categories are not mutually exclusive. n, number of patients; N, total number of patients. Percentages were rounded to the nearest whole number.

Intravenous antibiotic therapy was instituted promptly upon admission for all patients. Amoxicillin–clavulanic acid was used as the standard first-line empirical regimen in 74% of cases, while a combination of ceftriaxone and metronidazole was used as an alternative or second-line regimen in 26% of cases. The majority of patients responded favorably to

medical management alone (89%). Surgical intervention, consisting exclusively of incisional or abscess drainage, was required in 6 patients (11%), due to organized collections or insufficient response to initial medical therapy. The mean duration of hospitalization was 5.6 days. Clinical course was favorable without sequelae in 52 patients (98%); one patient (2%) died of septic shock (Table IV).

Table III. Microbiological Sampling and Identified Pathogens

Microbiological Sampling (N = 53)	n	%
Blood cultures performed	51	96%
Purulent / surgical site sample performed	3	6%
Throat / nasal swab performed	0	0%
Pathogen Identified (positive cultures, n = 4)		
Staphylococcus aureus	3	75%
Streptococcus pneumoniae	1	25%

n, number of patients; N, total number of patients. Percentages were rounded to the nearest whole number.

Table IV. Therapeutic Interventions and Clinical Outcome Profile

Management & Outcome Metric	n / Value	%
Primary Antibiotic Regimen (N = 53)		
Intravenous amoxicillin–clavulanic acid (first-line)	39	74%
Ceftriaxone + metronidazole (second-line)	14	26%
Therapeutic Interventions (N = 53)		
Conservative medical management only	47	89%
Surgical drainage required	6	11%
— Incisional / abscess drainage	6	100% of surgical cases
Clinical Course & Outcomes (N = 53)		
Mean duration of hospitalization, days	5.6	—
Favorable recovery without sequelae	52	98%
Fatal outcome (septic shock)(e)	1	2%

eThe patient who died of septic shock is the single documented clinical complication of this series (2%). n, number of patients; N, total number of patients. Percentages were rounded to the nearest whole number.

DISCUSSION

Our retrospective evaluation of 53 pediatric cases showed that adenophlegmon, orbital, and periorbital infections represented the cornerstone of severe pediatric ENT emergencies, in line with epidemiological series [1-3]. The demographic findings of early childhood susceptibility (mean age 4.35 years) and male predominance (58%) were consistent with international patterns, including a recent Moroccan series reporting comparable age and sex distributions in pediatric ENT emergencies [4]; such a pattern is potentially linked to the high incidence of upper respiratory tract infections in this age group and to age-dependent patterns of sinus and lymphoid tissue development.

The predominance of adenophlegmon and deep neck space involvement in our cohort was consistent with several pediatric series identifying retropharyngeal, parapharyngeal, and peritonsillar infections as leading causes of severe deep ENT infections in children [5-7]. Periorbital infections in children are common and usually mild, but orbital cellulitis is a true emergency needing multidisciplinary care and surgical intervention when abscess or deterioration occur [8]. Reported microbiological profiles of deep neck abscesses in children are dominated by Streptococcus and Staphylococcus species, often in polymicrobial association with oral anaerobes [13,14]; the pathogens identified in our cohort were broadly consistent with this pattern, despite a markedly lower culture-positivity rate.

A critical point of discussion was our surgical intervention rate, which was only 11%. This was substantially lower than historical and some contemporary series reporting surgical drainage rates ranging between 15% and 40%, particularly for collections exceeding a defined size threshold or associated with airway compromise [15,16]. A possible explanation is our institutional practice of early, high-dose intravenous amoxicillin–clavulanic acid administration immediately upon admission, which may have halted disease progression before organized abscesses developed; this hypothesis could not be tested in the present descriptive study. A medicine-first paradigm is increasingly supported in the literature, where a substantial proportion of even moderate-sized collections resolve with intravenous broad-spectrum antibiotic coverage alone, and early surgery is reserved for non-responders or for clear clinical deterioration [10,16]. The use of intravenous amoxicillin–clavulanic acid as first-line empirical therapy in 74% of our patients was consistent with recent recommendations on the antimicrobial management of pediatric ENT infections, which advocate this combination, or comparable beta-lactam/beta-lactamase-inhibitor regimens, to cover common beta-lactamase-producing pathogens including Haemophilus

influenzae and oral anaerobes, reserving broader-spectrum regimens such as ceftriaxone–metronidazole for more severe presentations or treatment failure [9,12].

Our microbiological findings deserve specific comment. Despite blood cultures being obtained in 96% of patients, a causative organism was identified in only 4 cases (8%), with Staphylococcus aureus predominating (3 of 4 isolates). This low yield contrasts with deep neck abscess series in which intraoperative or purulent sampling — rather than blood culture alone — is the main driver of pathogen identification, with reported positivity rates considerably higher when pus or abscess fluid is systematically cultured [13,17]. This difference underscored the largely clinical and radiological basis on which therapeutic decisions had to rely in our cohort; more systematic intraoperative or needle-aspiration sampling, even outside formal surgical drainage, could improve future pathogen surveillance and guide antibiotic de-escalation.

Furthermore, our diagnostic CT utilization rate of 64% was in line with current pediatric recommendations advocating selective imaging to limit unnecessary ionizing radiation in children, with ultrasound used as an alternative or first-line modality in the remaining selected cases [18,19]. CT was reserved strictly for children presenting with warning clinical signs (e.g., trismus, ocular immobility, or asymmetric palatal swelling) or those failing to defervesce within 48 hours. This selective strategy mirrored the increasing role described for ultrasound as an effective first-line tool for distinguishing cellulitis from drainable collections in superficial or laterocervical neck infections, with CT reserved for deeper spaces, suspected complications, or non-conclusive ultrasound findings [20,21]. On imaging, diffuse cellulitis (45%) and organized abscess (43%) were the two leading findings, in proportions broadly comparable to those reported in other pediatric series of deep neck and orbital infections [3,6].

Given the small number of events (6 surgical cases and a single death), no inferential comparisons were performed in the present study, and no predictors of surgical drainage or complications could be identified; this is in line with other single-center pediatric series in which sample size constrained the identification of robust predictors of surgical intervention and prognosis [7,11,22]. The overall complication rate was low (2%), but it corresponded to a fatal outcome from septic shock, illustrating that even apparently localized pediatric ENT infections can progress to systemic sepsis, particularly in younger infants [4,22].

This study had several limitations. First, its retrospective, single-center design and small sample size (53 patients) limited its statistical power and the generalizability of the findings to other settings and populations. Second, the study population was heterogeneous: it grouped infectious conditions (adenophlegmon, periorbital and orbital cellulitis, mastoiditis, deep neck abscesses, and others) that may differ in clinical presentation, management strategies, and outcomes. This heterogeneity, together with the marked imbalance between subgroups (for example, 6 patients who underwent surgical drainage versus 47 managed medically), precluded any valid comparative analysis; the findings are therefore purely descriptive and should be interpreted in that light. Third, the low rate of microbiological documentation limits etiological conclusions. Despite these limitations, this series describes the whole spectrum of severe ENT infectious emergencies requiring hospitalization in children in our center. Larger prospective multicenter studies, preferably focusing on more homogeneous entities, are needed to validate empirical management protocols and to better characterize predictors of surgical intervention and complications.

CONCLUSION

In this retrospective series of 53 children hospitalized for pediatric ENT infectious emergencies, adenophlegmon and periorbital cellulitis were the most frequent diagnoses (23% each). Most patients (89%) were managed medically with intravenous antibiotic therapy, mainly amoxicillin–clavulanic acid; surgical drainage was required in 11% of cases. The outcome was favorable in 98% of patients, and one child (2%) died of septic shock.

Declarations

Conflict of Interest. The authors declare that they have no competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Ethics Approval. This study was approved by the Institutional Review Board / Local Ethics Committee of Ben Arous University Hospital. Due to the retrospective nature of the study, the requirement for informed consent was waived.

Author Contributions. R.T.: study conception, manuscript drafting. M.A.: data collection and analysis. N.J., F.F., A.M.: data collection, critical revision of the manuscript. All authors approved the final version submitted.

REFERENCES

[1] Bernius M, Perlin D. Pediatric ear, nose, and throat emergencies. Pediatr Clin North Am. 2006;53(2):195-214.

[2] Baudoin T, Kalogjera L, Bedeković V, Drviš P, Mišir M. Infectious diseases as an emergency at an ear-nose-throat pediatric division. Acta Clin Croat. 2001;40:281-285.

[3] Côrte F, Firmino-Machado J, Moura C, Spratley J, Santos M. Acute pediatric neck infections: outcomes in a seven-year series. Int J Pediatr Otorhinolaryngol. 2017;99:128-134.

[4] Boukhari A, Attifi H, Hmidi M. Pediatric ENT emergencies: epidemiological, clinical, and therapeutic aspects. A 5-year retrospective analysis of 150 cases. SAS J Surg. 2025.

[5] Esposito S, De Guido C, Pappalardo M, Laudisio S, Meccariello G, Capoferri G, et al. Retropharyngeal, parapharyngeal and peritonsillar abscesses. Children (Basel). 2022;9(5):618.

[6] Glavan M, Dreu L, Lanišnik B. Parapharyngeal and retropharyngeal abscesses in children: a report of eight cases. Children (Basel). 2025;12(4):487.

[7] Jędrychowski J, Wolniewicz M, Zawadzka-Głos L. Retropharyngeal abscess as an example of a deep neck infection in children. New Med. 2022;26(2).

[8] Santos J, Pinto S, Ferreira S, Maia C, Alves S, Da Silva V. Pediatric preseptal and orbital cellulitis: A 10-year experience. Int J Pediatr Otorhinolaryngol. 2019;120:82-88.

[9] Cohen R, Madhi F, Thollot F, Hau I, Vié le Sage F, Lemaître C, et al. Antimicrobial treatment of ENT infections. Infect Dis Now. 2023:104785.

[10] Lawrence R, Bateman N. Controversies in the management of deep neck space infection in children: an evidence-based review. Clin Otolaryngol. 2017;42(2):156-163.

[11] Paksoy Z, Cayonu M, Demir A. Clinical features and prognostic factors in pediatric deep neck infections: a retrospective study. Acta Otolaryngol. 2025;145(3):251-255.

[12] Abudinen-Vasquez S, Marin M. Management of pediatric head and neck infections in the emergency department. Pediatr Emerg Med Pract. 2020;17(11):1-24.

[13] Mariani M, Saffioti C, Mesini A, Palmero C, D'Agostino R, Garofolo S, et al. Clinical and microbiological characteristics of deep neck abscesses in pediatrics: analysis of a case series from a 3rd level pediatric hospital. Children (Basel). 2023;10(9):1506.

[14] Huang CM, Huang F, Chien YL, Chen PY. Deep neck infections in children. J Microbiol Immunol Infect. 2017;50(5):627-633.

[15] Akhavan M. Ear, nose, throat: beyond pharyngitis — retropharyngeal abscess, peritonsillar abscess, epiglottitis, bacterial tracheitis, and postoperative tonsillectomy. Emerg Med Clin North Am. 2021;39(3):661-675.

[16] Velhonoja J, Lääveri M, Soukka T, Hirvonen J, Kinnunen I, Irjala H. Early surgical intervention enhances recovery of severe pediatric deep neck infection patients. Int J Pediatr Otorhinolaryngol. 2021;144:110694.

[17] Shimizu Y, Hidaka H, Ozawa D, Kakuta R, Nomura K, Yano H, et al. Clinical and bacteriological differences of deep neck infection in pediatric and adult patients: review of 123 cases. Int J Pediatr Otorhinolaryngol. 2017;99:95-99.

[18] Zhao X, Badolato G, Cohen JS. Variability in advanced imaging of pediatric neck infections in US emergency departments. Am J Emerg Med. 2022;53:140-143.

[19] Maroldi R, Farina D, Ravanelli M, Lombardi D, Nicolai P. Emergency imaging assessment of deep neck space infections. Semin Ultrasound CT MR. 2012;33(5):432-442.

[20] Rozovsky K, Hiller N, Koplewitz B, Simanovsky N. Does CT have an additional diagnostic value over ultrasound in the evaluation of acute inflammatory neck masses in children? Eur Radiol. 2010;20(2):484-490.

[21] Collins B, Stoner J, Digoy G. Benefits of ultrasound vs. computed tomography in the diagnosis of pediatric lateral neck abscesses. Int J Pediatr Otorhinolaryngol. 2014;78(3):423-426.

[22] Menezes AS, Ribeiro D, Guimarães J, Lima A, Dias L. Management of pediatric peritonsillar and deep neck infections — cross-sectional retrospective analysis. World J Otorhinolaryngol Head Neck Surg. 2019;5(4):207-214.