



BRAIN ABSCESS DUE TO ODONTOGENIC INFECTION IN A CHILD (Case Report)

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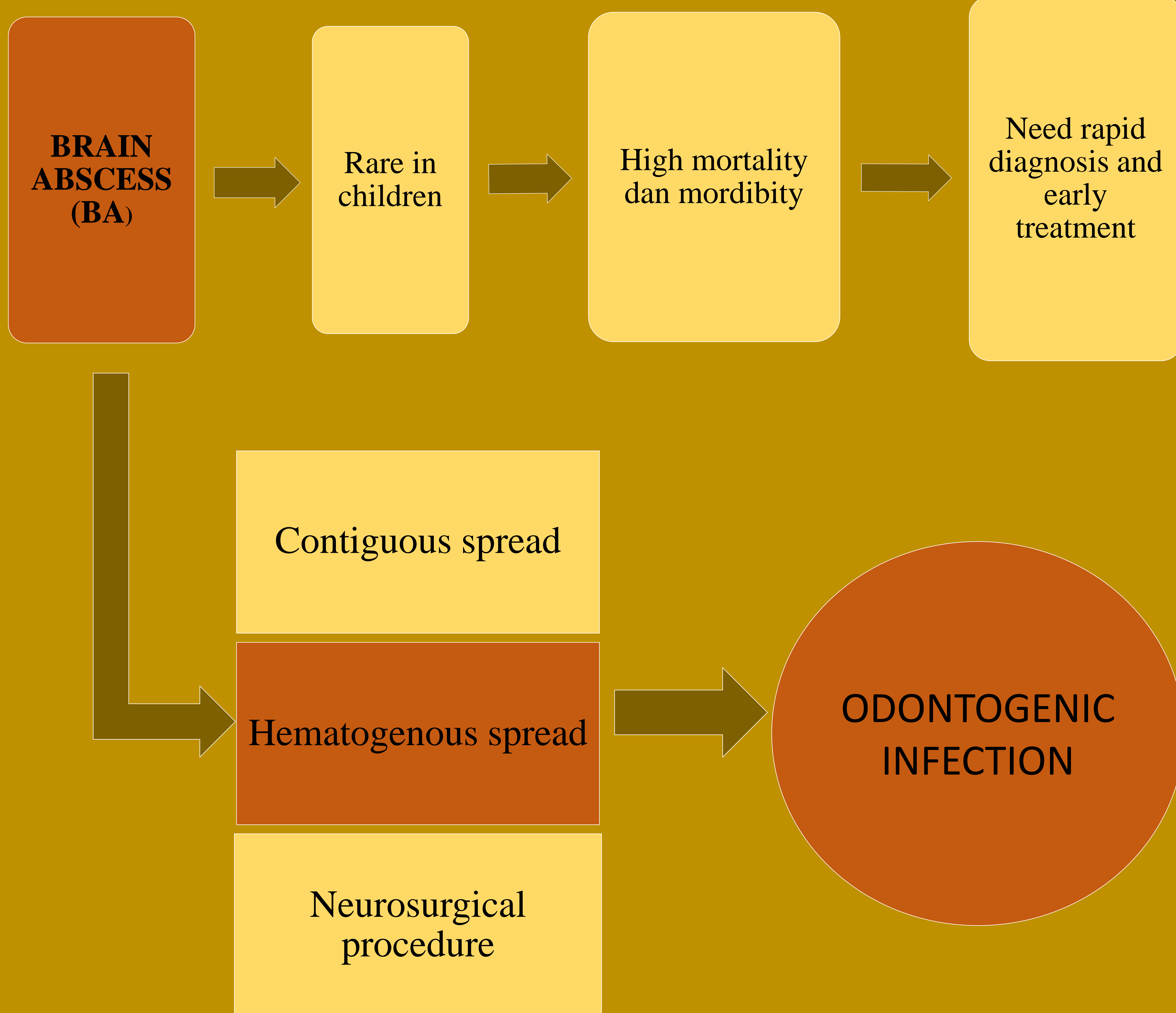
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INTRODUCTION



OBJECTIVE

In this case report, we would like to describe a case of child with a brain abscess that might be caused by an odontogenic infection. Diagnosis in this case was established by clinical examination, imaging and laboratory investigation, while treatment consisted of mini craniotomy for abscess drainage followed by eradication of all foci of potential dental infections, and antibiotic regimens. This report showed that multidisciplinary approaches contributed in the rapid detection and proper management so that helps prevent serious complications.



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CASE OPERATION PROCEDURE

A 13 years-old female was referred from Neurosurgery Division, RSUD Tangerang city for oral examination of focal infection. She was hospitalized and diagnosed with Brain Abscess. She came to the emergency room one weeks ago with a state of decline consciousness, seizures, high fever, vomiting, and a history of severe headaches. There was no history of trauma, weakness of limbs, visual abnormalities or bowel and bladder disturbances. Glasgow Coma Scale score was 15/15. The patients have never experienced these before. Laboratory investigation revealed that hemoglobin was 11.7 g/dL; total leukocyte count: $27.6 \times 10^3 / \mu\text{L}$, erythrocyte sedimentation rate (ESR): 38 mm/hr, glucose level at the time 305mg/dL, oxygen saturation 77.4%, and decrease electrolyte value. A diagnosis of right frontal lobe abscess caused by a suspected odontogenic infection was made. Oral diagnostic team was consulted to identify a possible odontogenic focus.

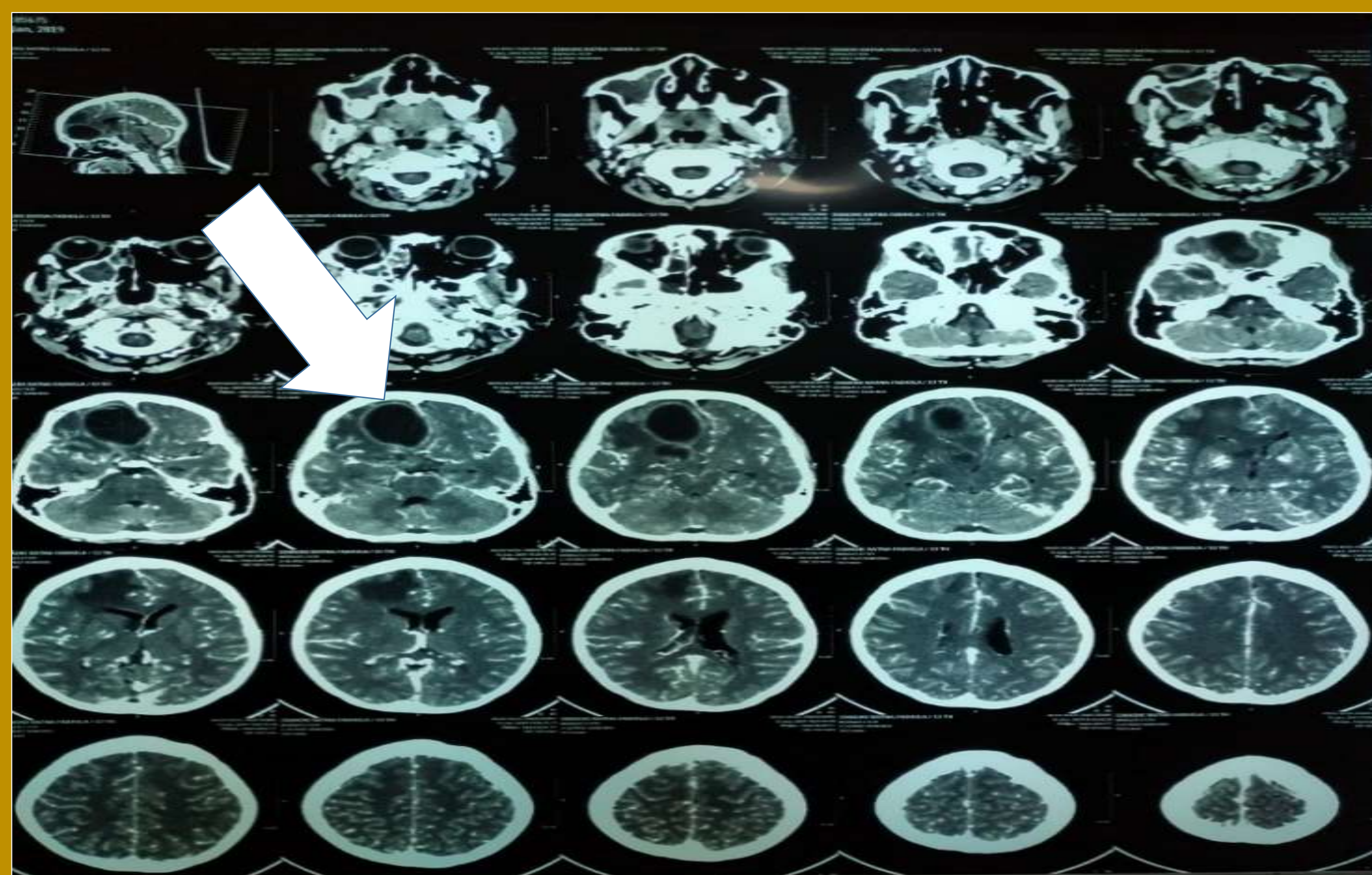


Figure A. Computed Tomography (CT) showed hypo dense lesions with the presence of ring enhancement in the right frontal lobes surrounded by perifocal edema that shifted the midline to the left side.



Figure B. Panoramic radiograph showed the range of periapical radiolucency and no radiolucency in sinus maxillary area.



Figure C. Post extraction of multiple retained dental root and teeth with pulp necrosis



Figure D. Clinical appearance post teeth extraction

Case Management

Craniotomy

A combination of antibiotics, dexamethasone, paracetamol and diazepam

Elimination of focus infection

The bacterial cultures



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DISCUSSION

BRAIN ABSCESS (BA)

The routes of entry of micro-organisms

Contiguous spread (middle ear infection, infection in paranasal sinuses, and mastoiditis)

Haematogeneous spread (Odontogenic infections)

Direct inoculation from outside (infected compound skull fracture, bullet injury, intracranial surgery)

Triad of symptoms

Headache

Fever

Vomiting

Alteration in consciousness can sometimes occur in some patients

The course of the infection depends on

The virulence of the bacteria

Host resistance factors

The regional anatomy

Haematogeneous spread occurs through the bloodstream from infectious focus at a distant site. Odontogenic infections are part of this form of spread.

Anaerobic species (*Bacteroides*, *Fusobacterium*, anaerobic *Streptococcus*) are responsible for the majority of cases of odontogenic (78%) brain abscess is seen in culture

In this case the result of microbiological examination was negative

A combined therapy with a third- or fourth-generation cephalosporin and metronidazole should be the regimen of choice for patients with a brain abscess arising from an oral, otogenic, or sinus source

- Already received antimicrobial therapy before surgical intervention
- A study revealed 24%-40% of all intracerebral abscesses produce negative culture results because the patient has already received antimicrobial therapy

CONCLUSION

Odontogenic infection could be the single source of brain abscess in children. Dentists should understand that even bacterial focus infection could produce neurological disorder by hematogenous route that a life-threatening

REFERENCES

1. Krzysztofciak, Andrzej & Zangari, Paola & Luca, Maia & Villani, Alberto. (2017). Brain Abscesses: An Overview in Children. Journal of Pediatric Infectious Diseases. 10.1055/s-0037-1615786.
2. Menon S, Bharadwaj R, Chowdhary A, Kaundinya DV, Palande DA. Current epidemiology of intracranial abscesses: a prospective 5 year study. J Med Microbiol. 2008 Oct;57(Pt 10):1259-68.
3. Sonnevile R, Ruimy R, Benzonana N, Riffaud L, Carsin A, Tadié JM, Piau C, Revest M, Tattévin P; ESCMID Study Group for Infectious Diseases of the Brain (ESGIB). An update on bacterial brain abscess in immunocompetent patients. Clin Microbiol Infect. 2017 Sep;23(9):614-620
4. Clifton TC, Kalamchi S. A case of odontogenic brain abscess arising from covert dental sepsis. Ann R Coll Surg Engl. 2012 Jan;94(1):e41-3.
5. Ben Hadj Hassine M, Oualha L, Derbel A, Douki N. Cerebral abscess potentially of odontogenic origin. Case Rep Dent. 2015;2015:267625.
6. Zia Ullah, Zia Ur Rehman. Brain abscess in childre with cyanotic Congenital Heart Disease- clinical presentation and outcome. 2018

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