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Hyperbaric Oxygen Therapy as an Adjuvant in Necrotizing External Otitis: A Systematic Review of Recent Studies

AUTHORS:

ASSA PUTRI NUR ANISYA^{1,2}, TIARA MELATI^{2,3}

¹ Anugerah Sehat Afiat General Hospital, West Java, Indonesia; ² Faculty of Medicine, Trisakti University, Jakarta, Indonesia; ³ Department of Otorhinolaryngology, Faculty of Medicine, Trisakti University, Jakarta, Indonesia

ABSTRACT

Necrotizing external otitis is a **progressive infection** of meatus acoustic external which may extend to the skull base. Most common **underlying cause is diabetes mellitus** in the elderly. Evidence suggests that the use of **hyperbaric oxygen therapy as an adjuvant** to antibiotic and surgical interventions **may be beneficial** for necrotizing external otitis, but the **research** in this area is still **relatively limited**.

OBJECTIVES

To **review** and provide information regarding the **role of hyperbaric oxygen therapy as an adjuvant**.

METHODS AND MATERIALS

PubMed/MEDLINE, Google Scholar and Cochrane Library were searched for publications in English between **2015 and 2025** using **PRISMA guideline**.

RESULTS

- 6 studies
 - 74 patients antibiotic only
 - 105 patients antibiotic + hyperbaric oxygen therapy**
- Median age 62 years [IR 56–72]
- Diabetes mellitus in 89,38% patients

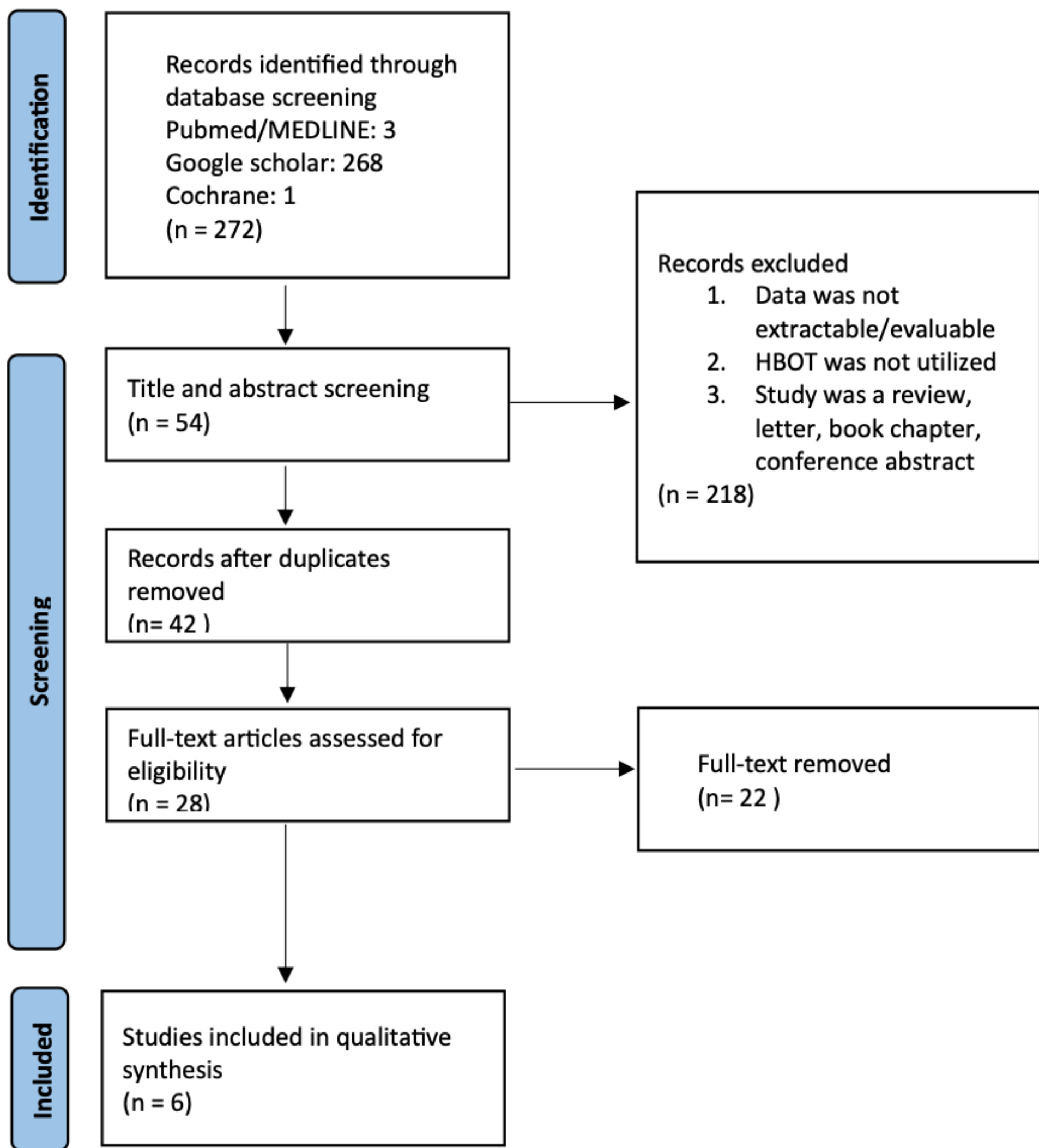


Fig 1. PRISMA Guideline

- Most common bacteria (82.64%) ***Pseudomonas aeruginosa***
- Fluoroquinolones and beta-lactams** are the most used antibiotics
- Facial nerve involvement 22.3% of patients
- Hyperbaric oxygen therapy** (average **duration 83.3 minutes** at a **pressure of 2–2.5 ATA**) was given in conjunction with antibiotics in 88.8% patients
 - 95% recovery rate** when compared to antibiotic alone
- Six patients with facial nerve palsy** experienced a **complete recovery**.

Author	Country	Subjects		Age		Antibiotics	HBOT Settings		Recovery rate	
		AB	AB + HBOT	AB	AB + HBOT		(atm, duration)	Sessions	AB	AB + HBOT
Reda (2015)	Egypt	28	15	64 (IR 58 - 70)	62	Ciprofloxacin	2-2.5 ATA, 90 mins	1 session every other day for 2 months	7%	93%
Elwany (2024)	Egypt	11	11	65.91± 7.44SD	67,36	Oral ciprofloxacin + antipseudomonal cephalosporin ceftazidime	2-3 ATA, 60 mins	1x/day, 20 sessions	36% recovered, 54,5% stage I, 0.09% stage II	72% recovered, 27% stage I
Amaro (2019)	Portugal	-	16	-	71	Ciprofloxacin	2.5 ATA, 70 mins	1x/day, 5x/week, 20 sessions or more depending on the healing results. (median 42 days IR[30, 60])	-	100%
Simon (2024)	Germany	12	24	-	70,2	Not mentioned	2.4 ATA, 100 mins	20.2 (SD±8.4)	57.1%	87%
Mardassi (2016)	Tunis	23	19	-	67	- Cephalosporin (Ceftazidime: 6 g/d) + Fluoroquinolones (Ciprofloxacin: 800 mg/d) in 34 cases - A third-generation cephalosporin with aminoglycoside (Gentamycin: 3 mg/kg/d) in 5 cases - Fluoroquinolones + aminoglycoside in 3 cases. - Oral antibiotherapy with Fluoroquinolones (Ciprofloxacin: 1000 to 1500 mg/d) for all the patients	2.5 ATA, 90 mins	1 session/day	74%	100%
Siyabi (2023)	Oman	-	20	-	64,6	Ciprofloxacin, Ceftazidime, Tazobactam, Meropenem, Clotrimazole	2.4 ATA, 90 mins	29.0±8.9 sessions		95%

AB: Antibiotics; HBOT: Hyperbaric Oxygen Therapy; ATA: Absolute atmosfer

Fig 2. Demographic information of included studies.

CONCLUSION

Hyperbaric oxygen therapy as an adjuvant for necrotizing external otitis is a **valuable treatment** due to **improved recovery rate** and **minimal adverse effects**, which may results in a **shorter hospital stay**.

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