Otitis media

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Otitis media (Latin for "inflammation of the middle ear") is the medical term for middle ear infection. Although several subtypes of otitis media are distinguished, the term is often used synonymously with *acute otitis media*. It is very common in childhood but may occur at any age.

Contents [hide]

Otitis media

Classification and external resources

A view of the tympanic membrane showing acute otitis media

ICD-10	H65-H67
ICD-9	017.40, 055.2, 381.0, 381.1, 381.2, 381.3, 381.4, 382
DiseasesDB	29620 serous, 9406 suppurative
MedlinePlus	000638 acute, *007010* with effusion, *000619* chronic
eMedicine	emerg/351 ent/426 complications, ent/209 with effusion, ent/212 Medical treat., ent/211 Surgical treat. ped/1689
MeSH	D010033

Signs and symptoms [edit]

An integral symptom of acute otitis media is ear pain; other possible symptoms include fever, and irritability (in infants). Since an acute otitis media is usually precipitated by an upper respiratory tract infection, there often are accompanying symptoms like cough and nasal discharge.[1]

Otorrhea, which is a discharge from the ear, can be caused by acute otitis externa, chronic suppurative otitis media, tympanostomy tube otorrhea, or acute otitis media with perforation.[2] Trauma, such as a basilar skull fracture, can also lead to otorrhea.

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Nederlands
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Polski
Português
Română
Runa Simi
Русский
Slovenščina
Српски / srpski
Srpskohrvatski / српскохрватски
Suomi
Svenska
Українська
Tiếng Việt
中文
Edit links

Causes [edit]

The common cause of all forms of otitis media is blockage of the Eustachian tube. This is usually due to swelling of the mucous membranes in the nasopharynx, which in turn can be caused by a viral upper respiratory infection or by allergies.[3] Because of the blockage of the Eustachian tube, the air volume in the middle ear is trapped and parts of it are slowly absorbed by the surrounding tissues, leading to a mild vacuum in the middle ear. Eventually the vacuum can reach a point where fluid from the surrounding tissues is sucked in to the middle ear's cavity (also called tympanic cavity), causing middle ear effusion. This is seen as a progression from a Type A tympanogram to a Type C to a Type B tympanogram.

By reflux or suction of material from the nasopharynx into the normally sterile middle ear space, the fluid may then become infected - usually with bacteria. In rare cases, however, the virus that caused the initial upper respiratory tract infection can itself be identified as the pathogen causing the infection in the middle ear.[3]

Diagnosis [edit]

As its typical symptoms overlap with other conditions, clinical history alone is not sufficient to predict whether acute otitis media is present; it has to be complemented by visualization of the tympanic membrane.[4]

To confirm the diagnosis, middle ear effusion and inflammation of the eardrum have to be identified; signs of these are fullness, bulging, cloudiness and redness of the eardrum.[1] Viral otitis may also result in blisters on the external side of the tympanic membrane, which is called *bullous myringitis* (*myringa* being Latin for "eardrum")[5]

However, sometimes even examination of the eardrum may not be able to confirm the diagnosis, especially if the canal is small and there is wax in the ear that obscures a clear view of the eardrum. Also, an upset child's crying can cause the eardrum to look inflamed due to distension of the small blood vessels on it, mimicking the redness associated with otitis media.

Acute otitis media [edit]

Acute otitis media (AOM) usually develops due to a (viral) upper respiratory infection with blockage of the Eustachian tube and effusion in the middle ear, when the fluid in the middle ear gets additionally infected with bacteria. The most common bacteria found in this case are Streptococcus pneumoniae, Haemophilus influenzae, and Moraxella catarrhalis.[1]

Otitis media with effusion [edit]

Otitis media with effusion (OME), also called serous or secretory otitis media (SOM) or glue ear,[6] is simply a collection of fluid that occurs within the middle ear space due to the negative pressure produced by altered Eustachian tube function. This can occur purely from a viral URI, with no pain or bacterial infection, or it can precede and/or follow acute bacterial otitis media. Fluid in the middle ear sometimes causes conductive hearing impairment, but only when it interferes with the normal vibration of the eardrum by sound waves. Over weeks and months, middle ear fluid can become very thick and glue-like (thus the name glue ear), which increases

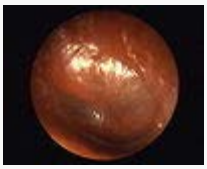
the likelihood of its causing conductive hearing impairment. Early-onset OME is associated with feeding while lying down and early entry into group child care, parental smoking, too short a period of breastfeeding and greater amounts of time spent in group child care increased the duration of OME in the first two years of life.[7]

Chronic suppurative otitis media [edit]

Chronic suppurative otitis media involves a perforation (hole) in the tympanic membrane and active bacterial infection within the middle ear space for several weeks or more. There may be enough pus that it drains to the outside of the ear (otorrhea), or the purulence may be minimal enough to only be seen on examination using a binocular microscope. This disease is much more common in persons with poor Eustachian tube function. Hearing impairment often accompanies this disease.

Adhesive otitis media [edit]

Adhesive otitis media has occurred when a thin retracted ear drum becomes sucked into the middle ear space and stuck, i.e. adherent, to the ossicles and other bones of the middle ear.



Acute otitis media

Acute otitis media

Acute otitis media - Myringitis bullosa

Myringitis bullosa in influenza

Chronic otitis media (otitis media chronica mesotympanalis)

Otitis media chronica mesotympanalis

Otitis media chronica mesotympanalis

Otitis media chronica mesotympanalis

Prevention [edit]

Long term antibiotics, while they decrease rates of infection during treatment, have an unknown effect on long term outcomes such as hearing loss.[8] They are thus not recommended.[1]

Pneumococcal conjugate vaccines when given during infancy decrease rates of acute otitis media by 6–7% and if implemented broadly would have a significant public health benefit.[9]

Certain factors such as season, allergy predisposition and presence of older siblings are known [10]

to be determinants of recurrent otitis media and persistent middle ear effusions (MEE). Previous history of recurrence, environmental exposure to tobacco smoke, use of daycare, and lack of breastfeeding have all been associated with increased risk of OM development, recurrence, and persistent MEE.[11][12]

There is some evidence that breastfeeding for the first twelve months of life is associated with a reduction in the number and duration of OM infections.[13][14] Pacifier use, on the other hand, has been associated with more frequent episodes of AOM.[15]

Evidence does not support zinc supplementation as an effort to reduce otitis rates except maybe in those with severe malnutrition such as marasmus.[16]

Management [edit]

Oral and topical pain killers are effective to treat the pain caused by otitis media. Oral agents include ibuprofen, paracetamol (acetaminophen), and opiates. Topical agents shown to be effective include antipyrine and benzocaine ear drops.[17] Decongestants and antihistamines, either nasal or oral, are not recommended due to the lack of benefit and concerns regarding side effects.[18] Half of cases of ear pain in children go away without treatment in three days and 90% go away in seven or eight days.[19]

Antibiotics [edit]

It is important to weigh the benefits and harms before using antibiotics for acute otitis media. As over 80% of acute episodes settle without treatment, about 20 children must be treated to prevent one case of ear pain, 33 children to prevent one perforation, and 11 children to prevent one opposite side ear infection. The harms include, for every 14 children treated one child has an episode of either vomiting, diarrhea or a rash.[20] Deferring the start of antibiotics in acute otitis media for one to three days if pain is manageable with analgesics is currently recommended.[21][22]

The first line antibiotic treatment, if warranted, is amoxicillin.[1] If there is resistance or use of amoxicillin in the last 30 days then amoxicillin-clavulanate or another penicillin derivative plus beta lactamase inhibitor is recommended.[1] While less than 7 days of antibiotics have less side effects, more than seven days appear to be more effective.[23] Among short-course antibiotics, long-acting azithromycin was found more likely to be successful than short-acting alternatives.[24] If there is no improvement after 2–3 days of treatment a change in therapy may be considered.[1]

Another treatment option for chronic otitis media with discharge is topical antibiotics. A Cochrane review found that topical quinolone antibiotics can improve discharge better than oral antibiotics.[25] Safety is not really clear.[25]

Tympanostomy tube [edit]

In chronic cases with effusions, insertion of tympanostomy tube (also called a "grommet") into the eardrum reduces recurrence rates in the 6 months after placement[26] but have little effect on long term hearing.[27] Thus tubes are recommended in those who have more than 3 episodes of acute otitis media in 6 month or 4 in a year associated with an effusion.[28]

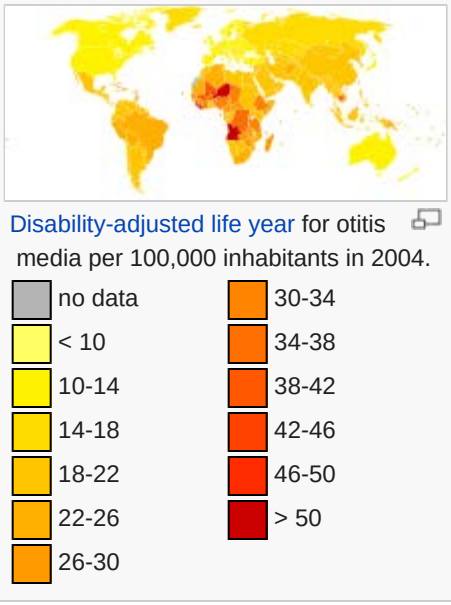
A common complication of getting a tympanostomy tube is experiencing otorrhea, which is a discharge from the ear.[29] Oral antibiotics should not be used to treat uncomplicated acute tympanostomy tube otorrhea.[29] Oral antibiotics are not a sufficient response to bacteria which cause this condition and have significant side effects including increased risk of opportunistic infection.[29] In contrast, topical antibiotic eardrops can treat this condition.[29]

Alternative medicine [edit]

Complementary and alternative medicine is not recommended for otitis media with effusion because there is no evidence of benefit.[30] An osteopathic manipulation technique called the Galbreath technique[31] was evaluated in one randomized controlled clinical trial; one reviewer concluded that it was promising, but a 2010 evidence report found the evidence inconclusive.[32]

Prognosis [edit]

Complications of acute otitis media consist in perforation of the ear drum, infection of the mastoid space behind the ear (mastoiditis), or bacterial meningitis in rare cases.[33][34]



Rupture [edit]

In severe or untreated cases, the tympanic membrane may rupture, allowing the pus in the middle ear space to drain into the ear canal. If there is enough of it, this drainage may be obvious. Even though the rupture of the tympanic membrane suggests a highly painful and traumatic process, it is almost always associated with the dramatic relief of pressure and pain. In a simple case of acute otitis media in an otherwise healthy person, the body's defenses are likely to resolve the infection and the ear drum nearly always heals.

Hearing loss [edit]

Children with recurrent episodes of acute otitis media and those with otitis media with effusion or chronic otitis media, have higher risks of developing conductive and sensorineural hearing loss. Globally approximately 141 million people have mild hearing loss due to otitis media (2.1% of the population).[35] This is more common in males (2.3%) than females (1.8%).[35]

This hearing loss is mainly due to fluid in the middle ear or rupture of the tympanic membrane. Prolonged duration of otitis media is associated with ossicular complications, and together with persistent tympanic membrane perforation contributes to the severity of both the disease and the hearing loss. When a cholesteatoma or granulation tissue is present in the middle ear, the degree of hearing loss and ossicular destruction is even greater.[36]

Periods of conductive hearing loss from otitis media may have a detrimental effect on speech

development in children.[37] Recent studies have also linked otitis media to educational problems, attention disorders, and problems with social adaptation.[38] Furthermore it has been demonstrated that patients suffering from otitis media have more depression/anxiety-related disorders compared to individuals with normal hearing.[39] Once the infections resolve and hearing thresholds return to normal, childhood otitis media may still cause minor and irreversible damage to the middle ear and cochlea.[40]

Epidemiology [edit]

Acute otitis media is very common in childhood. It is the most common condition warranting medical therapy in children under five years of age in the US.[41] As of 2010 it caused about 3,500 deaths down from 5,200 in 1990.[42]

References [edit]

1. ^ **a b c d e f g** Lieberthal, AS; Carroll, AE; Chonmaitree, T; Ganiats, TG; Hoberman, A; Jackson, MA; Joffe, MD; Miller, DT; Rosenfeld, RM; Sevilla, XD; Schwartz, RH; Thomas, PA; Tunkel, DE (Feb 25, 2013). "The Diagnosis and Management of Acute Otitis Media.". *Pediatrics* **131** (3): e964–99. doi:10.1542/peds.2012-3488. PMID 23439909.
2. ^ Scott, PM (Aug 2006). "Otorrhea--a fresh look at an old symptom.". *JAAPA : official journal of the American Academy of Physician Assistants* **19** (8): 30–7. doi:10.1097/01720610-200608000-00006. PMID 16918084.
3. ^ **a b** John D Donaldson. "Acute Otitis Media". Medscape . Retrieved 17 March 2013.
4. ^ Laine MK, Tähtinen PA, Ruuskanen O, Huovinen P, Ruohola A (May 2010). "Symptoms or symptom-based scores cannot predict acute otitis media at otitis-prone age". *Pediatrics* **125** (5): e1154–61. doi:10.1542/peds.2009-2689. PMID 20368317.
5. ^ Roberts DB (April 1980). "The etiology of bullous myringitis and the role of mycoplasmas in ear disease: a review". *Pediatrics* **65** (4): 761–6. PMID 7367083.
6. ^ "Glue Ear". *NHS Choices*. Department of Health . Retrieved 3 November 2012.
7. ^ Owen MJ, Baldwin CD, Swank PR, Pannu AK, Johnson DL, Howie VM (1993). "Relation of infant feeding practices, cigarette smoke exposure, and group child care to the onset and duration of otitis media with effusion in the first two years of life". *J. Pediatr.* **123** (5): 702–11. doi:10.1016/S0022-3476(05)80843-1. PMID 8229477.
8. ^ Leach AJ, Morris PS (2006). "Antibiotics for the prevention of acute and chronic suppurative otitis media in children". In Leach, Amanda J. *Cochrane Database Syst Rev* (4): CD004401. doi:10.1002/14651858.CD004401.pub2. PMID 17054203.
9. ^ Jansen AG, Hak E, Veenhoven RH, Damoiseaux RA, Schilder AG, Sanders EA (2009). "Pneumococcal conjugate vaccines for preventing otitis media". In Jansen, Angelique GSC. *Cochrane Database Syst Rev* (2): CD001480. doi:10.1002/14651858.CD001480.pub3. PMID 19370566.
10. ^ Rovers MM, Schilder AG, Zielhuis GA, Rosenfeld RM (2004). "Otitis media". *Lancet* **363**: 564–573. doi:10.1016/S0140-6736(04)15546-3. PMID 14962529.
11. ^ Pukander J, Luotonem J, Timonen M, Karma P (1985). "Risk factors affecting the occurrence of acute otitis media among 2-3 year old urban children". *Acta Otolaryngol* **100** (3-4): 260–265. doi:10.3109/00016488509104788. PMID 4061076.
12. ^ Etzel RA (1987). "Smoke and ear effusions". *Pediatrics* **79** (2): 309–311. PMID 3808812.
13. ^ Dewey KG, Heinig MJ, Nommsen-Rivers LA (1995). "Differences in morbidity between breast-fed and formula-fed infants". *J Pediatr* **126** (5 Pt 1): 696–702. doi:10.1016/S0022-3476(95)70395-0.

PMID 7751991.

14. ^ Saarinen UM (1982). "Prolonged breast feeding as prophylaxis for recurrent otitis media". *Acta Pediatr Scan* **71** (4): 567–571. doi:10.1111/j.1651-2227.1982.tb09476.x. PMID 7136672.
15. ^ Rovers MM, Numans ME, Langenbach E, Grobbee DE, Verheij TJ, Schilder AG (August 2008). "Is pacifier use a risk factor for acute otitis media? A dynamic cohort study". *Fam Pract* **25** (4): 233–6. doi:10.1093/fampra/cmn030. PMID 18562333.
16. ^ Abba K, Gulani A, Sachdev HS (2010). "Zinc supplements for preventing otitis media". In Abba, Katharine. *Cochrane Database Syst Rev* (2): CD006639. doi:10.1002/14651858.CD006639.pub2. PMID 20166086.
17. ^ Sattout, A.; Jenner, R. (February 2008). "Best evidence topic reports. Bet 1. The role of topical analgesia in acute otitis media". *Emerg Med J* **25** (2): 103–4. doi:10.1136/emj.2007.056648. PMID 18212148.
18. ^ Coleman C, Moore M (2008). "Decongestants and antihistamines for acute otitis media in children". In Coleman, Cassie. *Cochrane Database Syst Rev* (3): CD001727. doi:10.1002/14651858.CD001727.pub4. PMID 18646076.
19. ^ Thompson, M; Vodicka, TA; Blair, PS; Buckley, DI; Heneghan, C; Hay, AD; TARGET Programme, Team (Dec 11, 2013). "Duration of symptoms of respiratory tract infections in children: systematic review.". *BMJ (Clinical research ed.)* **347**: f7027. doi:10.1136/bmj.f7027. PMID 24335668.
20. ^ Venekamp, Roderick P; Sharon Sanders2, Paul P Glasziou, Chris B Del Mar, Maroeska M Rovers (31 January 2013). "Antibiotics for acute otitis media in children (Systematic Review)". *Cochrane Database of Systematic Reviews* (1): CD000219 (3rd rev.). doi:10.1002/14651858.CD000219.pub3. PMID 14973951.
21. ^ Damoiseaux R (2005). "Antibiotic treatment for acute otitis media: time to think again". *CMAJ* **172** (5): 657–8. doi:10.1503/cmaj.050078. PMC 550637. PMID 15738492.
22. ^ Marchetti F, Ronfani L, Nibali S, Tamburlini G (2005). "Delayed prescription may reduce the use of antibiotics for acute otitis media: a prospective observational study in primary care". *Arch Pediatr Adolesc Med* **159** (7): 679–84. doi:10.1001/archpedi.159.7.679. PMID 15997003.
23. ^ Kozyrskyj A, Klassen TP, Moffatt M, Harvey K (2010). "Short-course antibiotics for acute otitis media". *Cochrane Database of Systematic Reviews* (9): CD001095 (2nd rev.). doi:10.1002/14651858.CD001095.pub2. PMID 20824827.
24. ^ Gulani A, Sachdev HP, Qazi SA (January 2010). "Efficacy of short course (<4 days) of antibiotics for treatment of acute otitis media in children: a systematic review of randomized controlled trials". *Indian Pediatr* **47** (1): 74–87. doi:10.1007/s13312-010-0010-9. PMID 19736367.
25. ^ *a b* Macfadyen, CA; Acuin, JM; Gamble, C (Jan 25, 2006). "Systemic antibiotics versus topical treatments for chronically discharging ears with underlying eardrum perforations.". *The Cochrane database of systematic reviews* (1): CD005608. PMID 16437533.
26. ^ McDonald S, Langton Hewer CD, Nunez DA (2008). "Grommets (ventilation tubes) for recurrent acute otitis media in children". In McDonald, Stephen. *Cochrane Database Syst Rev* (4): CD004741. doi:10.1002/14651858.CD004741.pub2. PMID 18843668.
27. ^ Browning GG, Rovers MM, Williamson I, Lous J, Burton MJ (2010). "Grommets (ventilation tubes) for hearing loss associated with otitis media with effusion in children". In Browning, George G. *Cochrane Database Syst Rev* (10): CD001801. doi:10.1002/14651858.CD001801.pub3. PMID 20927726.
28. ^ Wilson SA, Mayo H, Fisher M (May 2003). "Clinical inquiries. Are tympanostomy tubes indicated for recurrent acute otitis media?" (PDF). *J Fam Pract* **52** (5): 403–4, 406. PMID 12737775.
29. ^ *a b c d* American Academy of Otolaryngology – Head and Neck Surgery, "Five Things Physicians and Patients Should Question", *Choosing Wisely: an initiative of the ABIM Foundation* (American Academy of Otolaryngology – Head and Neck Surgery), retrieved August 1, 2013 , which cites

- Rosenfeld, R. M.; Schwartz, S. R.; Pynnonen, M. A.; Tunkel, D. E.; Hussey, H. M.; Fichera, J. S.; Grimes, A. M.; Hackell, J. M.; Harrison, M. F.; Haskell, H.; Haynes, D. S.; Kim, T. W.; Lafreniere, D. C.; LeBlanc, K.; Mackey, W. L.; Netterville, J. L.; Pipan, M. E.; Raol, N. P.; Schellhase, K. G. (2013). "Clinical Practice Guideline: Tympanostomy Tubes in Children". *Otolaryngology -- Head and Neck Surgery* **149** (1 Suppl): S1–S35. doi:10.1177/0194599813487302. ISSN 0194-5998.

30. ^ Rosenfeld RM, Culpepper L, Yawn B, Mahoney MC (June 2004). "Otitis media with effusion clinical practice guideline". *Am Fam Physician* **69** (12): 2776, 2778–9. PMID 15222643.
31. ^ Pratt-Harrington D (October 2000). "Galbreath technique: a manipulative treatment for otitis media revisited". *J Am Osteopath Assoc* **100** (10): 635–9. PMID 11105452.
32. ^ Bronfort G, Haas M, Evans R, Leininger B, Triano J (2010). "Effectiveness of manual therapies: the UK evidence report". *Chiropr Osteopat* **18**: 3. doi:10.1186/1746-1340-18-3. PMC 2841070. PMID 20184717.
33. ^ Spremo S, Udovcić B (May 2007). "Acute mastoiditis in children: susceptibility factors and management". *Bosn J Basic Med Sci.* **7** (2): 127–31. PMID 17489747.
34. ^ Klossek JM (Jul–Aug 2009). "Recherche et prise en charge de la porte d'entrée ORL des méningites aiguës bactériennes communautaires" [Diagnosis and management of ENT conditions responsible for acute community acquired bacterial meningitis]. *Médecine et Maladies Infectieuses* (in French) **39** (7–8): 554–9. doi:10.1016/j.medmal.2009.02.027. PMID 19419828.
35. ^ *a b* Vos, T (Dec 15, 2012). "Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010.". *Lancet* **380** (9859): 2163–96. doi:10.1016/S0140-6736(12)61729-2. PMID 23245607.
36. ^ Da Costa SS; Rosito, Letícia Petersen Schmidt; Dornelles, Cristina (February 2009). "Sensorineural hearing loss in patients with chronic otitis media". *Eur Arch Otorhinolaryngol* **266** (2): 221–4. doi:10.1007/s00405-008-0739-0. PMID 18629531.
37. ^ Roberts K (June 1997). "A preliminary account of the effect of otitis media on 15-month-olds' categorization and some implications for early language learning". *J Speech Lang Hear Res* **40** (3): 508–18. PMID 9210110.
38. ^ Bidadi S, Nejadkazem M, Naderpour M (November 2008). "The relationship between chronic otitis media-induced hearing loss and the acquisition of social skills". *Otolaryngol Head Neck Surg* **139** (5): 665–70. doi:10.1016/j.otohns.2008.08.004. PMID 18984261.
39. ^ Gouma P, Mallis A, Daniilidis V, Gouveris H, Armenakis N, Naxakis S (January 2011). "Behavioral trends in young children with conductive hearing loss: a case-control study". *Eur Arch Otorhinolaryngol* **268** (1): 63–6. doi:10.1007/s00405-010-1346-4. PMID 20665042.
40. ^ Yilmaz S, Karasalihoglu AR, Tas A, Yagiz R, Tas M (February 2006). "Otoacoustic emissions in young adults with a history of otitis media". *J Laryngol Otol* **120** (2): 103–7. doi:10.1017/S0022215105004871. PMID 16359151.
41. ^ John D Donaldson. "Acute Otitis Media". Medscape . Retrieved 17 March 2013.
42. ^ Lozano, R (Dec 15, 2012). "Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010.". *Lancet* **380** (9859): 2095–128. doi:10.1016/S0140-6736(12)61728-0. PMID 23245604.

External links [edit]

- Neff MJ (June 2004). "AAP, AAFP, AAO-HNS release guideline on diagnosis and management of otitis media with effusion". *Am Fam Physician* **69**

(12): 2929–31. PMID 15222658.

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v · t · e **Common cold** [show]

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