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What will you do if you face a case of amblyopia ??

Prescribe a full time spectacle wear for 3-4 months and follow up

What will you do if you face a case of amblyopia

Start occlusion therapy immediately

What will you do if you face a case of amblyopia

Start penalization of the stronger eye using atropine drops once a day

What will you do if you face a case of amblyopia

Do nothing

But remember that

Amblyopia is responsible for more visual loss in childhood than all the other causes of visual loss combined

Why it is important to improve the vision in the amblyopic eye?

An untreated amblyopic eye can lead to a virtually "blind" eye.

This has consequences if the child lost the sight of his good eye later in life through accident or eye disease.

So we must do our best to treat amblyopia

Treatment of amblyopia

The initial treatment for children with amblyopia and a refractive error, should be full time spectacle wear for 3-4 months before occlusion or penalization are used.

If, at the end of this period, the vision in the amblyopic eye has not started to improve, occlusion therapy in the form of patching, is recommended.

If there has been some visual improvement with glasses alone, occlusion therapy is not needed, but will be started when there is no further visual improvement with glasses alone.

What Type of patches available?

Patches applied directly to the skin:

These eye patches are designed to be worn on the face underneath any glasses required.

They are also available as hypo allergic patches for those with very sensitive skin.

These are the most suitable patches for children with very poor vision in their amblyopic eye because it is harder for them to move the patch or to try to peep around it.

Patches attached to the glasses:

These eye patches are designed to be worn on the child's glasses but it will be necessary to closely monitor your child to ensure that they do not try to peep by moving the patch sideways or pulling their glasses down to look over the top of the patch.

When to wear the patch

The vision improve more quickly if the child is "working" the amblyopic eye by performing some sort of close work and activities such as reading (or being read to), colouring or playing with electronic games.

Performing near activities while patching improves the VA outcome more than patching alone.

The patching technique

There is good evidence that 2 hours of patching a day is as effective as 6 hours of patching for moderate cases of amblyopia (vision between 20/40 – 20/80 or 6/12-6/24).

In more severe amblyopia , patching for 6 hours per day is usually recommended.

Note that

Full time patching is no more effective than patching for 6 hours per day, even in severe amblyopia.

- Patching for 2 hours per day can be done 2 hours continuously or separate hours , but continuous method is better.
- If you forget to patch one day try to patch for twice the recommended time the next day

Any patching is better than none at all and you may be able to gradually increase the length of time the patch is worn as your child's vision improves

Note

The duration of patching will depend on the severity of the amblyopia, the age of the child and how well the child and their parents are able to stick to the prescribed patching regime!

Patching regimens Trials for treatment of amblyopia in children

A randomized trial of prescribed patching regimens for treatment of severe amblyopia in children

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Ophthalmology. 2003 Nov;110(11):2075-87.

A randomized trial of prescribed patching regimens for treatment of severe amblyopia in children.

Holmes JM, Kraker RT, Beck RW, Birch EE, Cotter SA, Everett DF, Hertle RW, Quinn GE, Repka MX, Scheiman MM, Wallace DK, Pediatric Eye Disease Investigator Group.

Abstract

OBJECTIVE: To compare full-time patching (all hours or all but 1 hour per day) to 6 hours of patching per day, as prescribed treatments for severe amblyopia in children younger than 7 years.

DESIGN: Prospective, randomized multicenter clinical trial (32 sites).

PARTICIPANTS: One hundred seventy-five children younger than 7 years with amblyopia in the range of 20/100 to 20/400.

INTERVENTION: Randomization either to full-time patching or to 6 hours of patching per day, each combined with at least 1 hour of near-visual activities during patching.

MAIN OUTCOME MEASURE: Visual acuity in the amblyopic eye after 4 months.

RESULTS: Visual acuity in the amblyopic eye improved a similar amount in both groups. The improvement in the amblyopic eye acuity from baseline to 4 months averaged 4.8 lines in the 6-hour group and 4.7 lines in the full-time group ($P = 0.45$).

CONCLUSION: Six hours of prescribed daily patching produces an improvement in visual acuity that is of similar magnitude to the improvement produced by prescribed full-time patching in treating severe amblyopia in children 3 to less than 7 years of age.

Comment in

Patching regimens. [Ophthalmology. 2004]

Patching regimens for amblyopia. [Ophthalmology. 2005]

Patching regimens. [Ophthalmology. 2004]

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A randomized trial of increasing patching for amblyopia. [Ophthalmology. 2013]

Review Compliance and patching and atropine amblyopia treatments. [Vision Res. 2015]

Review Vision Screening in Children Aged 6 Months to 5 Years: Evidence Repo [JAMA. 2017]

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CONCLUSION

Six hours of prescribed daily patching produces an improvement in visual acuity that is of similar magnitude to the improvement produced by prescribed full-time patching in treating severe amblyopia in children 3 to less than 7 years of age

Efficacy of split hours part-time patching versus continuous hours part-time patching for treatment of anisometropic amblyopia in children

Br J Ophthalmol. 2013 Jul;97(7):874-8. doi: 10.1136/bjophthalmol-2012-302976. Epub 2013 May 15.

Efficacy of split hours part-time patching versus continuous hours part-time patching for treatment of anisometropic amblyopia in children: a pilot study.

Sachdeva V[1], Mittal V, Kekunnaya R, Gupta A, Rao HL, Mallah J, Senthil A, Gandhi R, Rao BV

Author information

Abstract

AIM: To compare efficacy of 'split hours part-time patching' and 'continuous hours part-time patching' for the treatment of anisometropic amblyopia.

METHODS: We designed a prospective, interventional, non-randomised, comparative pilot study involving children between 4 and 11 years of age with anisometropic amblyopia who were treated with either continuous wear (Group A) or split hours part-time patching (Group B) as per parents wish, after appropriate discussion with the parents. Children were followed-up for the improvement in visual acuity and the compliance at each follow-up visit.

RESULTS: 44 and 24 children were recruited in Group A and Group B, respectively (mean ± SD baseline BCVA of the amblyopic eye: 0.99 ± 0.32 and 0.95 ± 0.23 logMAR, respectively). BCVA (adjusted for baseline BCVA and age) at 3 months in Group A (0.59 ± 0.24) was comparable (p=0.08) with that in Group B (0.71 ± 0.24). This was same even at 6 months (0.51 ± 0.25 in Group A and 0.59 ± 0.25 in Group B, p=0.25). The improvement in BCVA at 3 months was also comparable (p=0.06) in Group A (0.38 ± 0.23) and Group B (0.26 ± 0.23). The improvement in BCVA at 6 months was also comparable (p=0.14) in Group A (0.47 ± 0.26) and Group B (0.37 ± 0.26).

CONCLUSIONS: Both patching regimens lead to significant and comparable improvement in BCVA in anisometropic amblyopia up to 6 months of follow-up.

CONCLUSION

Both patching regimens lead to significant and comparable improvement in BCVA in anisometropic amblyopia up to 6 months of follow-up

Comparison between over-glasses patching and adhesive patching for children with moderate amblyopia

Graefes Arch Clin Exp Ophthalmol. 2018 Feb;256(2):429-437. doi: 10.1007/s00417-017-3811-2. Epub 2017 Dec 4.

Comparison between over-glasses patching and adhesive patching for children with moderate amblyopia: a prospective randomized clinical trial.

Kim SJ[1], Jeon H[2], Jung JH[2], Lee KM[3], Choi HY[4]

Author information

Abstract

PURPOSE: To investigate efficacy of over-glasses patching treatment for amblyopic children using visual function improvement and Amblyopia Treatment Index (ATI) changes.

METHODS: In a randomized multi-center controlled clinical trial, 107 children aged 3-7 years with moderate amblyopia (visual acuity in the range of 20/40 to 20/100) were included to receive treatment with either an adhesive skin patch or a fabric over-glasses patch. The patients were prescribed 2 h of patching per day for the sound eye. Best-corrected visual acuity (BCVA) was investigated and ATI questionnaires were collected from parents at 5 weeks and 17 weeks after the initiation of treatment. ATI identifies barriers and problems associated with amblyopia treatment. We compared the changes of visual acuity of amblyopic eyes and ATI scores in two groups.

RESULTS: At 17 weeks, the mean visual acuity of the amblyopic eye using Snellen chart improved 3.2 lines in the adhesive patching group and 2.7 lines for an over-glasses patching method that fit over eyeglasses ($p = 0.345$). A similar proportion of subjects in each group had improvement of ≥ 2 lines (adhesive patching group 67% vs over-glasses patching group 67%, $p = 0.372$). There was also no difference in treatment burden in each group as measured with the Amblyopia Treatment Index. The only item to demonstrate a significant difference between groups was that related to "Treatment makes the eye or eyelids red" (mean 4.0 ± 1.1 vs 3.0 ± 1.0 at 17 weeks, $p = 0.001$, for adhesive vs over-glasses patch).

CONCLUSIONS: Over-glasses patching treatment is a useful option for amblyopia treatment when the patients suffer from adverse effects of using adhesive skin patching.

CONCLUSION

Over-glasses patching treatment is a useful option for amblyopia treatment when the patients suffer from adverse effects of using adhesive skin patching

Results of the newly updated Studies of amblyopia therapy

Studies shown that 80% of the improvement in vision occurs within the first 6 weeks of treatment

The total number of hours of patching needed to achieve the best improvement in vision varied between 150-400 hours

In the ideal situation, patching is gradually reduced and then stopped when the vision is equal in both eyes.

However a more common scenario is that the vision in the amblyopic eye plateaus at 6/12 or 20/40 level and patching is tapered off at this point

Approximately 70% of children achieve this level of vision with patching treatment

Will the improvement in vision be permanent?

In approximately 80% of children the visual improvement is maintained for at least a year after patching is stopped.

Recurrence of the amblyopia is more likely to occur

- if patching is stopped suddenly,
- if the amblyopic eye is much more long sighted than the good eye (anisometropic amblyopia)
- or when the amblyopia is a combination of strabismic and anisometropic amblyopia.

This is why it is important to continue monitoring the vision until the child is 8-9 years of age, so any recurrence of the amblyopia can be treated.

When is it too late to start patching treatment

Although the connections between a child's eyes and their brain are normally fully formed by the age of 8-9 years, occlusion therapy can still be successful up to the age of 14 in some cases

What happens if the vision does not improve with glasses, patching and /or atropine penalisation?

If the vision in the amblyopic eye does not improve despite the fact that the glasses have been worn full time and patching and / or penalisation has been carried out as instructed.

We have to re-examine the fundus again to make sure that there is not a subtle abnormality of the optic nerve or retina (which might not have been apparent at the time of the initial examination), that could be the cause of the poor vision

If it appears that the chance of visual improvement with further treatment is unexpected and if the child is likely to find continued treatment upsetting, a decision may be taken to stop amblyopia treatment

Clin Ophthalmol. 2007 Dec;1(4):403-14.

Current concepts in the management of amblyopia.

de Zarate BR[1], Tejedor J.

Author information

Abstract

Traditional treatment of amblyopia, although still in use and of great value, has recently been challenged by data from studies relative to efficacy of different modalities and regimens of therapy. LogMAR-based acuity charts should be used, whenever possible, for diagnosis and monitoring. Refractive errors of certain magnitude should be prescribed, and correction worn for at least 4 months before occlusion or penalization are used. Occlusion has a linear dose-response effect (1 logMAR line gain per 120 hours of patching), and outcomes of 2 hour/day dosage are similar to more extended therapy, at least in moderate amblyopia, but increasing dosage beyond hastens the response. Pharmacologic, optical, or combined penalization is useful as an alternative or maintaining therapy, and is presumably of particular efficacy in anisometropic amblyopia. At least in moderate amblyopia, atropine penalization is as effective as patching in terms of visual acuity improvement and stereoacuity outcome.

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Comparative efficacy of penalization methods in moderate to mild amblyopia. [Arch J Ophthalmol. 2008]

Review Conventional occlusion versus pharmacolo [Cochrane Database Syst Rev. 2005]

Combined optical and atropine penalization for the treatment of strabismic and [J AAPOS. 2002]

Vis Neurosci. 2013 Jan;30:E015. doi: 10.1017/S0952523813000220.

Treatment of amblyopia as a function of age.

Holmes JM[1], Levi DM[2]

Author information

Abstract

Although historically, treatment of amblyopia has been recommended prior to closure of a critical window in visual development, the existence and duration of that critical window is currently unclear. Moreover, there is clear evidence, both from animal and human studies of deprivation amblyopia, that there are different critical windows for different visual functions and that monocular and binocular deprivation have different neural and behavioral consequences. In view of the spectrum of critical windows for different visual functions and for different types of amblyopia, combined with individual variability in these windows, treatment of amblyopia has been increasingly offered to older children and adults. Nevertheless, treatment beyond the age of 7 years tends to be, on average, less effective than in younger children, and the high degree of variability in treatment response suggests that age is only one of many factors determining treatment response. Newly emerging treatment modalities may hold promise for more effective treatment of amblyopia at older ages. Additional studies are needed to characterize amblyopia by using new and existing clinical tests, leading to improved clinical classification and better prediction of treatment response. Attention also needs to be directed toward characterizing and measuring the impact of amblyopia on the patients' functional vision and health-related quality of life.

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Binocular visual training to promote recovery from monocular deprivation. [J Vis. 2015]

Review Stereopsis and amblyopia: A mini-review. [Vision Res. 2015]

A special role for binocular visual input during development and. [Prestor Neurol Neurosci. 2008]

Binocular treatment of amblyopia using videogames (BRAVO): study protoc [Trials. 2015]

Review Perceptual learning as a potential

Some of the common questions the parents will ask us about

As

- **The rationale for patching**
- **The duration of patching**
- **How to make children wear their patch correctly.**

Why can't we leave the patching until my child is older

- Unfortunately by this time, it is often "too late" for the patching to work , because vision is developing at its fastest rate in the early years of life.
- An untreated amblyopic eye can lead to a virtually "blind" eye. This has consequences if the child lost the sight of his good eye later in life through accident or eye disease.

Is there is any operation to improve the sight in the lazy eye instead of the eye patch

- A strabismus operation can only restore the use of the two eyes together and / or improve the appearance of the squinting eye.
- It does not treat the poor vision in the amblyopic eye, this can only be done by patching / atropine drops and / or glasses

Atropine Penalisation

- As an alternative to patching the stronger eye can be "penalized" by using atropine drops once a day to this eye.
- These drops weaken the focusing mechanism of the eye so reducing the close up vision to such an extent that the child's brain "chooses" the image form the amblyopic eye rather than the blurred image from the stronger eye.

- Penalisation of the better seeing eye with atropine drops or ointment has been to be as effective as patching for moderate amblyopia.
- It has also been used to successfully treat severe amblyopia.
- Although the initial improvement in vision appears to be more rapid with patching, the visual improvement after six months of treatment is equally good.

Why isn't atropine penalisation the first choice of treatment for amblyopia?

While atropine is as effective as patching for treating amblyopia, and may be a more acceptable form of treatment to some children and their parents, it is less controllable than patching , as the effects of the atropine last for up to 2 weeks and can, rarely, cause a drop in vision in the good eye.

This is known as reversal amblyopia and is the reason why a child having atropine penalisation needs to be seen every 2-3 weeks, so the vision in both eyes can be closely monitored.

The risk of reversal amblyopia and the increased number of clinic visits are the main reasons why atropine penalisation is not routinely used as the initial treatment for amblyopia by most Ophthalmologists.

Atropine penalisation tends to be used if patching treatment has been unsuccessful despite good compliance with patching, or of the child is unable to tolerate wearing a patch.

Take Home Massage

- The initial treatment for children with amblyopia should be full time spectacle wear for 3-4 months before occlusion or penalization are used.

- 2 hours of patching a day is as effective as 6 hours of patching for moderate cases of amblyopia
- In more severe amblyopia , patching for 6 hours per day is usually recommended
- Full time patching is no more effective than patching for 6 hours per day, even in severe amblyopia

- **Penalisation of the better seeing eye with atropine drops or ointment has been demonstrated to be as effective as patching for moderate amblyopia.**

Thank You