

Oropharyngeal Candidiasis: A review of Current Intervention Strategies

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Summary This article sets out to review recent research studies pertaining to the drug treatment of oropharyngeal candidiasis in infants. The main aims of treatment programmes are to resolve signs and symptoms of the infection; and minimise drug induced resistance, with minimal adverse side effects. A search for clinical evidence using Medline, Nursing Index and Embase between 1995 and 2003, produces no systemic reviews, no placebo controlled trials only three random control trials for the treatment of oropharyngeal candidiasis in infants. Three independent randomised control trials with samples of infants with oropharyngeal candidiasis (who were not immuno-compromised), compare the three main drug treatments of choice for infants, i.e. miconazole gel, clotrimazole (nystatin) suspension, and fluconazole suspension. The randomised trial of these infants found that miconazole gel had a significantly higher cure rate compared with nystatin suspension. At day 12 of the trial there was a 99% cure rate with the use of miconazole gel (25 mg QDS) compared to only a cure rate of 54% with nystatin suspension (100 000 IU QDS) ($P < 0.0001$). The evidence from these studies suggest that miconazole gel (25 mg QDS) is the drug of choice for health visitors treating infants with oropharyngeal candidiasis, as it is a safe and effective and cost effective treatment regime from birth.

Keywords/phrases: Nurse prescribing; Oral Pharyngeal Candidiasis treatment in infants; randomised and controlled trials

Introduction

A study day in November 2003, on nurse prescribing with a group of twelve health visitors (who were all qualified nurse prescribers), undertaken by the University of Southampton, involved a group work session with the use of scenarios. In one scenario the group of health visitors were asked to prescribe for an infant with oropharyngeal candidiasis. This scenario created a lot of discussion amongst the health visitors partly because of the choice of drugs available to treat this condition, and partly due to the recent changes in recommendations in the use of nystatin oral suspension, which is now not licensed for treating candidiasis in neonates under 1 month of age [1]. Some health visitors attending the study day were unaware of this, and suggested that this change in prescribing nystatin oral suspension needed to be publicised more widely. This article sets out to review recent research studies pertaining to the drug treatment of oropharyngeal candidiasis in infants, and the alternative drug therapies available for treating oropharyngeal candidiasis other than the use of nystatin oral suspension.

Current Literature

A search for clinical evidence using Medline, Nursing Index and Embase between 1995 and 2003, produces no systemic reviews with regards the treatment of oropharyngeal candidiasis in infants, no placebo controlled

trials (i.e. trials comparing a known treatment for the infection with a treatment that has no direct effect on the infection), and only three random control trials for the treatment of oropharyngeal candidiasis in infants. It is perhaps no wonder then, that nurses seeking the evidence to back their treatment of this condition are not easily able to do so.

Oropharyngeal Candidiasis

By definition oropharyngeal candidiasis is an opportunistic mucosal infection caused in a majority of incidences by *Candida albicans*. Ellepola et al [2] state that there are four main types of candida infection namely pseudomembranous, erythematous, hyperblastic and denture induced stomatitis. The most common in infants are pseudomembranous, (with infants presenting with white discrete plaques on an erythematous background, on the buccal mucosa, throat or tongue), and the hyperblastic (with infants presenting with white firmly adherent patches usually bilateral on the buccal mucosa). Symptoms range from none to a sore and painful mouth, leading to impaired taste and nutritional intake. Webb et al [3] found that between 31 and 60% of healthy people have candida present in their mouths. In neonates, whose immunity is not compromised, spontaneous cure of oropharyngeal candidiasis usually occurs after 3–8 weeks.

Treatment Programmes

The main aims of treatment programmes are to resolve signs and symptoms of the infection; and minimise drug induced resistance, with minimal adverse side effects. Hoppe et al [4, 5] and Goins et al [6] undertook three independent randomised control trials with samples of infants with oropharyngeal candidiasis (who were not immuno-compromised), to compare the three main drug treatments of choice for infants, i.e. miconazole gel, clotrimazole (nystatin) suspension, and fluconazole suspension. Of the anti-fungal drugs used to treat oropharyngeal candidiasis, nystatin suspension is not absorbed from the gastro-intestinal tract and is absorbed by local application of the mouth. Miconazole is absorbed via local application of the mouth but is also partly absorbed systemically, and fluconazole is absorbed very effectively via application to the mouth [1]. These randomised control trials were not blinded or placebo controlled. The larger of the two studies undertaken by Hoppe et al [5] involved a sample of 183 infants with clinical signs of oropharyngeal candidiasis. The randomised trial of these infants found that miconazole gel had a significantly higher cure rate compared with nystatin suspension. At day 12 of the trial there was a 99% cure rate with the use of miconazole gel (25 mg QDS) compared to only a cure rate of 54% with nystatin suspension (100 000 IU QDS) ($P < 0.0001$).

Goins et al [6] undertook a randomised control trial involving a sample of 47 infants with clinical signs and a culture positive for candida infection. The study found that at 10 days fluconazole suspension (3 mg/kg OD for 7 days) had a 100% cure rate compared to nystatin suspension (100 000 IU QDS) with a 32% cure rate. The Hoppe et al [4, 5] studies found the most common side effect with both miconazole and nystatin was vomiting and very rarely diarrhoea (affecting less than 4.5% of infants). The study results of Hoppe et al [5] were corroborated by mycological findings (investigations into disease caused by fungal infection), which were blinded (i.e. the investigations were undertaken with no knowledge of the research aims and objectives). The sample for this study was representative of the context in which healthy infants with oropharyngeal candidiasis would be treated; this adds validity and reliability to these studies findings.

Conclusion

The evidence from these studies suggest that the drug of choice for health visitors treating infants with oropharyngeal candidiasis would therefore be miconazole gel (25 mg QDS), as it is effective and also cost effective at approximately £5.00 (GBP) for an 80 mg tube.

References

1. British Medical Association and the Royal Pharmaceutical Society of Great Britain. NPF incorporating BNF 46. Pharmaceutical Press (2003).
2. Ellepola AN, Samaranayake LP. Antimycotic agents in oral candidosis: an overview: 1. Clinical variants. *Dent Update* 2000 Apr; **27**(3): 111–2, 114–6. Review.

3. Webb BC, Thomas CJ, Willcox MD, Harty DW, Knox KW. Candida-associated denture stomatitis. Aetiology and management: a review. Part 3. Treatment of oral candidosis. *Aust Dent J*. 1998 Aug; **43**(4): 244–9. Review.
4. Hoppe JE, Hahn H. Randomized comparison of two nystatin oral gels with miconazole oral gel for treatment of oral thrush in infants. Antimycotics Study Group. *Infection* 1996 Mar–Apr; **24**(2): 136–9.
5. Hoppe JE. Treatment of oropharyngeal candidiasis in immunocompetent infants: a randomised multicenter study of miconazole gel vs. nystatin suspension. The Antifungals Study Group. *Pediatr Infect Dis J* 1997 Mar; **16**(3): 288–93.
6. Goins RA, Ascher D, Waecker N, Arnold J, Moorefield E. Comparison of fluconazole and nystatin oral suspensions for treatment of oral candidiasis in infants. *Pediatr Infect Dis J* 2002 Dec; **21**(12): 1165–7.