Fluconazole Reduces Candidiasis in VLBW Infants

BY JANE SALODOF MACNEIL Southwest Bureau

SAN FRANCISCO — Fluconazole prophylaxis reduced fungal infections and mortality in very low-birth-weight infants at two neonatal intensive care units in retrospective studies that were presented during the annual meeting of the Pediatric Academic Societies.

Incidence of invasive candidiasis in very low-birth-weight (VLBW) infants went

BRIEF SUMMARY: Consult the Full Prescribing Information for complete product information. ADDERALL XR® CAPSULES

ADDERALL XR[®] CAPSULES CIT R0 MO AMPHETAMINES HAVE A HIGH POTENTIAL FOR ABUSE. ADMINISTRATION OF AMPHETAMINES FOR PROLOMGED PERIODS OF TIME MAY LEAD TO DRUG DEPENDENCE. PARTICULAR ATTENTION SHOULD BE PAID TO THE POSSIBILITY OF SUBJECTS OBTAINING AMPHETAMINES FOR NON-THERAPEUTIC USE OR DISTRIBUTION TO OTHERS AND THE DRUGS SHOULD BE PRESCRIBED OR DISPENSED SPARINGLY. MISUSE OF AMPHETAMINE MAY CAUSE SUDDEN DEATH AND SERIOUS CARDIOVASCULAR ADVERSE EVENTS.

INDICATIONS ADDERALL XR® is indicated for the treatment of Attention Deficit Hyperactivity Disorder (ADHD). The efficacy of ADDERALL XR® in the treatment of ADHD was established on the basis of two controlled trials in children aged 6 to 12, one controlled trial in adolescents aged 13 to 17, and one controlled trial in adults who met DSM-VP" criteria for ADHD, along with extrapolation from the known efficacy of ADDERALL®, the immediate-release formulation of this substance. CONTRAINDICATIONS Advanced attencioclenrois: symptomatic cardinvascular disease moderate to severe hypertension hyperthyroidism known

from 6.7% to zero at Cooper University Hospital in Camden, N.J., Dr. Zubair H. Aghai reported. However, the intensive regimen used in the neonatal intensive care unit (NICU) led to a significant increase, from 16% to 45%, in conjugated hyperbilirubinemia.

At Brookdale University Hospital and Medical Center in Brooklyn, N.Y., a regimen given only to neonates colonized with *Candida* reduced candidal sepsis from 12.1% to 8.2% in VLBW infants.

CII Rx Only

Although the data reported by Dr. M. Roger Kim and colleagues at Brookdale was not statistically significant, associated mortality also declined from 16% to 9%. Dr. Vaishali Iha, the lead author, said in an interview that the Brookdale neonatologists did not see an increase in jaundice or any other adverse effects with their regimen.

Investigators from both groups said they introduced fluconazole prophylaxis because of the increased risk and incidence of invasive fungal infections with the growing number of VLBW infants in NICUs.

Dr. Manjula Mudduluru, the lead author of the poster on the Cooper hospital experience, cited a candidal sepsis rate of 5.5%-10% in neonates who weigh 1,000 g or less at birth. Fungal sepsis is associated with a mortality of 31.8% in premature neonates, according to Dr. Mudduluru, Dr. Aghai, and their colleagues from the hospital.

The Cooper hospital group compared 140 VLBW infants born from March 2002 to September 2005 with 137 historical controls born between January 1998 and



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DR. MUDDULURU

February 2002, which was prior to the introduction of the fluconazole regimen. The only significant differences at baseline were that more infants on prophylaxis also received surfactant and prenatal steroids. The regimen delivered $\frac{1}{3}$ mg/kg of fluconazole intravenously every 72 hours for 2 weeks, every 48 hours for 2 weeks, and daily for 3 weeks.

Nine infants developed invasive candidiasis and six of them died during the 2 years prior to introduction of the prophylaxis. Overall mortality fell from 39.4% to 25.7% after the prophylaxis was introduced and invasive candidiasis eliminated.

The investigators estimated that treating 15 VLBW infants with the prophylaxis would prevent one invasive candidiasis infection in their NICU-and that they would need to treat 69 neonates to prevent one death.

Dr. Mudduluru said the clinicians are experimenting with a less frequent dosing schedule to see whether they can reduce the rate of conjugated hyperbilirubinemia.

The investigators at Brookdale hospital considered infants who weighed up to 1,500 g at birth in their review. They compared 141 neonates born from January 2002 to May 2004 with 85 neonates born from July 2004 through June 2005.

During the latter period, weekly surveillance cultures were performed for neonates weighing less than 1,500 g. Infants colonized by Candida species received 3 mg/kg of fluconazole every 48 hours for 6 weeks or until their weight reached 1,500 g. The number of cases of invasive candidiasis per 1,000 patient-days fell from 2.1 to 1.6 during this period.

Dr. Jha said the investigators believe the improved outcomes would reach statistical significance with a larger patient sample. They are planning a randomized, multicenter trial, she said at the meeting, which was sponsored by the American Pediatric Society, the Society for Pediatric Research, the Ambulatory Pediatric Association, and the American Academy of Pediatrics.

CONTRANDICATIONS Advanced arteriosclerosis, symptomatic cardiovascular disease, moderate to severe hypertension, hyperthyroidism, known hypersensitivity or idiosyncrasy to the sympathomimetic amines, glaucoma. Agltated states. Patients with a history of drug abuse. During or within 14 days following the administration of monoamine oxidase inhibitors (hypertensive crises may result). WARNINGS Serious Cardiovascular Fvents Sudden Death and Pre-existing Structural Cardiac Abnormalities or Other Serious Heart Problems Children and Adolescents Sudden death has been reported in association with CNS stimulant treatment at usual doses in children and adolescents with structural cardiac abnormalities or other serious heart problems. Although some serious heart problems abne carry an increased risk of sudden death, stimulant products generally should not be used in children or adolescents with structural cardiac abnormalities, cardiovopathy, serious heart hythoma hormanilities, or other serious cardiac problems that may place them at increased vulnerability to the sympathomimetic effects of a stimulant drug (see CONTRAINDICATIONS). Sudden deaths, stroke, and mycocardia infraction have been reported in advils taking effortations. I deaths, stroke, and myocardial infraction have been reported in adults taking stimulant drugs at usual doses for ADHD. In the role of stimulants in these adult cases is also unknown, adults have a greater likelihood than children of having serious ral cardiac abnormalities, cardiomyopathy, serious heart rhythm abnormalities, coronary artery disease, or other serious car-biems. Adults with such abnormalities should also generally not be treated with stimulant drugs (see CONTRAINDICATIONS), and other Cardiovascular Conditions ant medications cause a modest increase in average blood pressure (about 2-4 mmHg) and average heart rate (about m) [see ADVERSE EVENTS], and individuals may have larger increases. While the mean changes alone would not be be however there are used and the treated with the context of the former mean mean example and the deated by the head by the former mean mean example and the provided blood. uran meucanons cause a modest increase in average blood pressure (about 2-4 mmHg) and average heart rate (about ppm) [see ADVERSE EVENTS], and individuals may have larger increases. While the mean changes alone would not be ted to have short-term consequences, all patients should be monitored for larger changes in heart rate and blood sure. Caution is indicated in treating patients whose underlying medical conditions might be compromised by ases in blood pressure or heart rate, e.g., those with pre-existing hypertension, heart failure, recent myocardial ction, or ventricular arrhythmia (see CONTRAINDICATIONS). ssing Cardiovascular Status in Patients being treated with Stimulant Medications fren, adolescents, or adults who are being considered for treatment with stimulant medications should have a careful ry (including assessment for a family history of sudden death or ventricular arrhythmia) and physical exam to assess for resence of cardiac disease, and should receive further cardiac evaluation if findings suggest such disease. And should neves and should neves exist for hypertarmation and echocardiogram). Patients who lop symptoms such as exertional chest pain, unexplained syncope, or other symptoms suggestive of cardiac disease g stimulant treatment should undergo a prompt cardiac evaluation. **Hairts Adverse Events**

ulant treatment s Adverse Events mather Averese creans ;xisting Psycholosia inistration of stimulants may exacerbate symptoms of behavior disturbance and thought disorder in patients with xisting psychotic disorder.

Inliness lar care should be taken in using stimulants to treat ADHD patients with comorbid bipolar disorder because of conc la induction of mixed/manic episode in such patients. Prior to initiating treatment with a stimulant, patient of determine if they are at risk for bipolar disorder

e induction of mixed/manic episode in such patients. Prior to initiating treatment with a stimulant, patients with id depressive symptoms should be adequately screened to determine if they are at risk for bipolar disorder, such g should include a detailed psychiatric history, including a family history of suicide, bipolar disorder, and depression, nce of New Psychotic or Manic Symptoms int emergent psychotic or manic symptoms

te en rever respondite or Manic Symptoms e.g., hallucinations, delusional thinking, or mania in children and mis without prior history of psychotic illness or mania can be caused by stimulants at usual doses. If such ns occur, consideration should be given to a possible causal role of the stimulant, and discontinuation of treatment appropriate. In a pooled analysis of multiple short-term, placebo-controlled studies, such symptoms occurred in % (4 patients with events out of 3482 exposed to methylphenidate or amphetamine for several weeks at usual doses) ant-treated patients compared to 0 in placebo-treated patients.

stimulant-treated patients compared to 0 in placebo-treated patients. gression gressive behavior or hostility is often observed in children and adolescents with ADHD, and has been reported in clinical is and the postmarketing experience of some medications indicated for the treatment of ADHD. Although three is no stematic evidence that stimulants cause aggressive behavior or hostility, patients beginning treatment for ADHD should be sintored for the appearance of or worsening of aggressive behavior or hostility. mg-Term Suppression of Growth reful follow-up of weight and height in children ages 7 to 10 years who were randomized to either methylphenidate or in-medication treatment groups over 14 months, as well as in naturalistic subgroups of newly methylphenidate-treated and in-medication treatment groups over 36 months (to the ages of 10 to 13 years), suggests that consistently medicated children in-medication treatment groups over 14 months, as well as in naturalistic subgroups of newly methylphenidate-treated and in-medication treatment groups over 14 months, as well as energina to 10 years, who were randomized to either methylphenidate treated and in-medication treatment groups over 14 months, as well as energina to 10 years, who were randomized to all of about m less growth in height and 2.7 kg less growth in weight over 3 years), without evidence of growth reducind of about m less growth in height and 2.7 kg less, respectively, for patients receiving 10 mg and 20 mg ADDERALL XRP. Her doses were associated with greater weight loss within the initia 4 weeks of treatment. Tholished data are inadequate to termine whether chronic use of amphetamines may cause a similar suppression of growth, however, it is anticipated that they likely have this effect as well. Therefore, growth should be monitored during this simulants, and patients who not growing or gaining weight as expected may need to have their treatment interrupted.

Fizzes of the second se

sual Disturbance ifficulties with accommodation and blurring of vision have been reported with stimulant treatment RECAUTIONS

prior teck evidence or setzides. In the presence or setzides, the drug should be discontinued. Visiaal Distrutance Difficulties with accommodation and blurring of vision have been reported with stimulant treatment. **PreCAUTIONS General:** The least amount of amphetamine feasible should be prescribed or dispensed at one time in order to minimize the possibility or overdosage. ADDERALL X4* should be used with caution in patients who use other sympathonimetic drugs. **Tech or overdosage.** ADDERALL X4* should be used with caution in patients who use other sympathonimetic drugs. **Tech or overdosage.** ADDERALL X4* should be used with caution in patients who use other sympathonimetic drugs. **Tech or overdosage.** ADDERALL X4* should be used with caution in patients who use other sympathonimetic drugs. **Tech or the tech or Patients:** Another the patient should therefore be cautioned accordingly. **Drug Interactions:** Acdifying agents—Gastrointestinal acidifying agents—Gastrointestinal acid prosphate, etc.) increase aborg the prosphate mines. *Unary acidfying agents—Gastrointestinal alkalinizing agents*. Gastrointestinal alkalinizing agents (southonium chicrake, stould be avoided. Unary akalinizing agents (soctare)—Gastrointestinal alkalinizing agents (soctare) active as an tackds, should be avoided. Unary akalinizing agents (soctare) and phetamines. *Jurnary acidfying agents*—Gastrointestinal alkalinizing agents (soctare) active as an tackds, should be avoided. Unary akalinizing agents (soctare) active as intrease absorption of the non-ionized species of the amphetamine incerase absorption of the prospective sets in a diverse set in the concernation of the non-ionized species of the amphetamines. *Antidepressants, tricyclic*—Amphetamines may enhance the activity of tricyclic antidepressants or sympathonimetic agents; d-amphetamine with designamine or portifytile and opssibly other tricyclics cause striking and assiblend increases in the concernation of anynetamines may deale atrices and other signs of hypertensiv

approximately 2.4, 1.5, and 0.8 times, respectively, the maximum recommended human dose of 30 mg/day [child] on a mg/m⁵ body surface area basis. Amphetamine, in the enantiomer ratio present in ADDERALL[#] (immediate-release)(d- to 1- ratio of 3:1), was not clastopenic in the mouse bone marrow micronucleus test *in vivo* and was negative when tested in the *E. coli* component of the Ames test *in witro*. d.1-Amphetamine, (1:1 enantiomer ratio) has been reported to produce a positive response in the mouse bone marrow micronucleus test, an equivocal response in the Ames test, and negative responses in the *in vitro* sister chromatid exchange and chromosomal aberration assays. Amphetamine, in the eventoper test in ADDERALL[#] (immediate-release) (d- to 1- ratio of 3:1), did not adversely affect fertility or early emotyonic development in the rat at doses of up to 20 mg/kg/day (approximately 5 times the maximum recommended human dose of 30 mg/day on a mg/m⁺ body surface area basis). **Preguancy**: Preguancy Category C. Amphetamine, in the enantiomer ratio present in ADDERALL[#] (d- to 1- ratio of 3:1), did not adversely affect throughout the period of organogenesis at doses of up to 2 and 16 mg/kg/day. (approximately 5 times the and rabbits and 8 times, respectively, the maximum recommended human dose of 30 mg/day (child] on a mg/m⁺ body surface area basis. Pretat mai/romative administration of these doses was also also up to 2 and 16 mg/kg/day. (approximately 0 surface area basis). Fatal mai/ormative studies and abbits and 8 times, respectively, the maximum recommended human dose of 30 mg/day (child] on a mg/m⁺ body surface area basis. A pretate dose was also associated with severe matrenal administration of d-amphetamine doses of 50 mg/kg/day (approximately 6 times that of a human dose of 30 mg/day (child] on a mg/m⁺ basis yurface area basis. A number of studies in rodents indicate that prenatal or early postnatal exosoure to amphetamine (d- or d, -), at doses similar to those used clinically, can result i

There are no adequate and well-controlled studies in pregnant women. There has been one report of severe congenital bony deformity, tracheo-esophageal fistula, and anal atresia (vater association) in a baby born to a woman who took dextroamphet-amine sulfate with lowastain during the first timester of pregnancy. Amphetamines should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus. **Nonteratogenci Effest:** (infast) som to ombers dependent on amphetamines have an increased risk of premature delivery and low birth weight. Also, these infants may experience symptoms of withdrawal as demonstrated by dysphoria, including agitation, and significant lassitude. refrain from nursing. Pediatric Use: ADDERALL XR[®] is indicated for use in children 6 years of age and older. Use in Children Under Six Years of Age: Effects of ADDERALL XR[®] in 3-5 year olds have not been studied. Long-term of ampletamines in children have not been well established. Ampletamines are not recommended for use in childre of amphetamines in children have not been well established. Amphetamines are 3 years of age. Geriatric Use: ADDERALL XR[®] has not been studied in the geriatric population. ADVERSE EVENTS

3 years of age. Geriatric Use: ADDERALL XR® has not been studied in the geriatric population. **ADVERSE EVENTS** Hypertension: [See WARNINGS section] in a controlled 4-week outpatient clinical study of adolescents with ADHD, isolated systolic blood pressure a levations ≥15 mmHg were observed in 7/64 (11%) placebo-treated patients and 7/100 (7%) platents receiving a DDERALL XR® ⁺ To a 20 mm (See Variant) (See Vari

Adverse event	% of pediatric patient discontinuing (n=595
Anorexia (loss of appetite)	2.9
Insomnia Weight loss	1.5 1.2
Emotional lability Depression	1.0 0.7
insomnia, 1% (n=2) each for	

General

Digestive

Metabolic/N

General

Digestive System

Patient Clini Body Systen

Digestive System

Nervous System

Cardiovascular System

Urogenital System

Metabolic/Nutritional Weight Loss

General

Metabolic/Nutritional Weight Loss ^b
^a Appears the same due to rounding
^b Dose-related adverse events
Note: The following events did not meet the treported by 2% to 4% of adolescent patients
incidence the astinctic receiving antechnic in

Table 2 Adverse Events ≤ 75 kg/165 lbs Receivi Placebo in a 287 Patier

In a separate placebo-controlled 4-week study in adolescents with tits. A0HD, eight patients (3.4%) discontinued treatment due to adverse events among ADDERALL XR*-treated patients (0.423). Three ations, motor tics, headaches, light-headedness, and anxiety. In one placebo-controlled 4-week study among adults with ADHO, patients who discontinued treatment due to adverse events among ADDERALL XR*-treated patients (N-191) were 3.1% (n-6) for nervourses including anxiety and irritability, 2.6% (n-5) for and somolence; and, 0.5% (n=1) each for ALT increase, agitation, chest iveinbl loss.

insomnia, 1% (n=2) each for headache, palpitation, and somnolence; and, 0.5% (n=1) eàch for ALT increase, agitation, chest pain, cocaine craving, elevated blood pressure, and weight loss. Adverse events occurring in a controlled triat. Adverse events reported in a 3-week clinical trial of pediatric patients and a 4-week clinical trial in adolescents and adults, respectively, treated with ADDERALL XPF or placebo are presented in the tables below. The prescriber should be aware that these figures cannot be used to predict the incidence of adverse events in the course of usual medical practice where patient characteristics and other factors of fifter from those which prevailed in the clinical trial. Similarly, the cited frequencies cannot be compared with figures obtained from other clinical investigations involving different treatments, uses, and investigations. The other digners, however, to provide the prescribing physician with some basis for estimating the relative contribution of drug and non-drug factors to the adverse event incidence rate in the population studied.

Contribution or drug and non-drug tactors to the adverse event incidence rate in the population studied. The following adverse reactions have been associated with the use of amphetamine, ADDERALL XR[®], or ADDERALL[®]: Cardiovascular: Palpitations, tachycardia, elevation of blood pressure, sudden death, myocardial infarction. There have been isolated reports of cardiomyopathy associated with chronic amphetamine use, overstimulation, restlessness, dizziness, insomnia, central Nervous System: Psychotic episodes at recommended doses, overstimulation of motor and phonic tics and Tourette's syndrome, seizures, stroke. Gastrointestinal: Dryness of the mouth, unpleasant taste, diarrhea, constipation, other gastrointestinal disturbances. Anorexia and weight loss may occur as undesirable effects.

2% 22% 2% 5% 7%

ligher Incident Dose Titration

(n=233)

11%

8% 8% 7%

11%

Allergic: Urticaria, rash, hypersensitivity reactions including angioedema and anaphylaxis. Serious skin rashes, including Stevens Johnson Syndrome and toxic epidermal necrolysis have been reported. Fradocrine: Imontence, changes in libido. Table 1 Adverse Events Reported by More Than 1% of Pediatric Patients Receiving ADDERALL XR® with Higher Incidence Than on Placebo in a 584 Patient Clinical Study Preferred Term ody System

Viral Infection

lausea ′omiting

Insomnia Nervousness Weight Loss

Loss of Appetite Diarrhea Dyspepsia

Dizziness Emotional Lability

is Reported by 5% or mo ring ADDERALL XR® with nt Clinical Forced Week Preferred Term

Abdominal Pain (stomachache)

Loss of Appetite

Nervousness

Asthenia Headache

Agitation Anxiety Dizziness Insomnia

Loss of Appetite Diarrhea Dry Mouth Nausea

Urinary Tract Infection 5%

ADDERALL XR[®] Placebo (n=374) (n=210) been reported. Endocrine: Impotence, changes in libido. DRUG ABUSE AND DEPENDENCE ADDERALL XR® is a Schedule II controlled Abdominal Pair 14% 10% (stomachache) Accidental Injury Asthenia (fatigue) Fever Infection 3% 2% 5% 4%

2%

2%

4% 6%ª

0%

3% 0% 5% 3%

0%

ADDERALL XR[®] is a Schedule II controlled substance. Amphetamines have been extensively abused. Tolerance, extreme psychological dependence, and severe social disability have occurred. There are reports of patients who have increased the dosage to levels many times higher than recommended. Abrupt cessation following prolonged high dosage administration results in extreme fatigue and mental depression; changes are also noted on the sleep EEG. Manifestations of chronic intoxication with amphetamines may include severe dermatoses, marked insonnia, intoxication is psychosis, often clinically indistinguishable from schizophrenia. **OverDIOSAGE** 2% 1% 1% 3% 4% 0% 2% 2% 2% 0%

Indistinguishable from schizophrenia. **OVERDOSAGE** Individual patient response to amphetamines varies widely. Toxic symptoms may occur idiosyncratically at low doses. Symptoms: Manifestations of acite overdosage with amphetamines include restlessness, tremor, hyperreflexia, rapid respiration, confusion, assaultiveness, hallucinations, panic states, hyperpresa and rhabdomyoykis. Fatigue and depression usually follow the central nervous system stimulation. Cardiovacular effects include arrhythmias, hypertension or hypotension and depression usually follow the central nervous include nausea vomiting, diarrhea, and abdominal include nausea, vomiting, diarrhea, and abdominal compositions and coma control Center for up to date guidance and advice. Management of acute amphetamine intoxication is largely symptomatic and Placebo (n=54)

advice. Management of acute ample intoxication is largely symptomati includes gastric lavage, administrat activated charcoal, administration of a c reported by 2% to 4% of adolescent patients receiving AUDENALL XH* with a higher incidence than patients receiving placebo in this study: accidental injury, asthenia (fatigue), dry mouth, dyspepsia, emotional lability, nausea, somnolence, and vomiting *Included doses up to 40 mg includes pastric lavage, administration of a cathartic and vated charcoal, administration of a cathartic and sedation. Experience with hemodalysis or peritoneal dialysis is inadequate to permit recommendation in this regard. Acidification of the urine increases amphetamine excretion, but is believed to increase risk of acute renal failure di myoglobiuma is present. If acute severe hypertension complicates amphetamines overdosage, administration of intravenous phentolamine than been suggested. However, a gradual drop in blood pressure will usually result when sufficient sedation has been achieved. Chiorpromazine admines and central situmiant effects of amphetamines and Table 3 Adverse Events Reported by 5% or More of Adults Receiving ADDERALL XR® with Higher Incidence Than on Placebo in a 255 ADDERALL XR® Placebo (n=191) (n=64) 5% 13%

> 5% 5% 0% 13% Dispense in a tight, light-resistant container as defined in the USP. Store at 25° C (77° F). Excursions permitted to 15-30° C (59-86° F) [see USP Controlled Room Temperature]. Excursions pe see USP Cont 0%

Lisee USP Controlled Noom lemperature]. Manufactured for. Shire US Inc., Wayne, PA 19087 Made in USA For more information call 1-800-828-2088, or visit www.adderalkr.com. ADDERALL* and ADDERALL XR* are registered in the US Patent and Trademark Office. Copyright ©2006 Shire US Inc. Volte: The following events did not meet the criterion for inclusion in Table 3 but were reported by 2% to 4% of adult patients receiving ADDERALL XR[®] with a higher inci-ferenc than patients receiving placebol in this study: infection, photosensitivity reaction, constipation, touch disorder, emotional lability, libido decreased, somnolence, speech disorder, palpitation, twitching, dyspnea, sweating, dysmenorrhea, and impotence. "Included doese up to 60 mg.

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