Transient acute paralysis (?? Toxicity of ayurvedic medications)- a Case Report

Vinayak R¹, Behal M²

¹Dr Rajeev Vinayak, Associate Professor, Department of Pediatrics, Maharishi Markandeshwar Medical College and Hospital, Solan, Himachal, Pradesh, India, ²Dr Manisha Behal, Associate Professor, Department of Obstetrics and Gynecology, Maharishi Markandeshwar Medical College and Hospital, Solan, Himachal Pradesh, India.

Address for Correspondence: Rajeev vinayak, House Number 399 A, Maharani Jhansi Road, Civil Lines, Ludhiana, Punjab, Pin- 141001. Email: rjv.vinayak@gmail.com

Abstract

Ayurvedic medicines have a long history of usage in Indian history. Side effects have been listed but enough experience of side effects and toxicity in humans is unknown. Here is a case presented with possible toxicity of Brahmi, Ashwagandha and Shankhpushpi or synergism of side effects resulting in transient paralysis which relieved completely and spontaneously within few days.

Key words: Ayurvedic, Brahmi, Shankhpushpi, Ashwagandha, toxicity, paralysis.

Introduction

Scientifically, Brahmi is known as Bacopa Monnieri L. Pennell [1, 2]. The herb has been mentioned in several Ayurvedic treatises including Charaka Samhita and Sushruta Samhita in the 3rd century AD. In addition to being a well-known Nootropic herb for centuries, it has also been used as an antispasmodic, alterative, astringent, cardio tonic, diuretic, anticonvulsant, anti-inflammatory, analgesic, antipyretic, and antiepileptic agent. [3, 4, 5]. Convolvulus pluricaulis is one of four herbs with the common name of Shankhapushpi that has traditionally been used as a cognitive enhancing herb and Nootropic. Ashwagandha is an Adaptogenic. It is supplemented primarily for its ability to prevent anxiety. It also shows promise for relieving insomnia and stress-induced depression, improve physical performance in sedentary people and athletes [6,7,8].

Case Report

A 13 year old child, 8th class student was admitted in Pediatrics department of this hospital via causality on with complaints of weakness in both lower limbs and right upper limb since 5-6 days. Weakness progressed overnight and was static since then. Patient was not able to walk, sit and feed with right hand without support. No history of seizures or altered sensorium and behavior. Patient had complaint of off and on moderate intensity headache since last 15 days for which he was taken to a doctor who prescribed some medicines which included 3 ayurvedic preparations and 1 pain killer (Diclofenac and Paracetamol). Patient was on Tablet Brahmi Bati by Baidnath (1 tablet twice daily), Tab Smritika (1 tablet twice daily) and Tab Seretone by Indian Herbal Remedies (1 tablet twice daily) since last 5-6 days. There was no other relevant or significant clinical history. There was no history of recent vaccination, trauma, recent viral infection or any chronic drug intake. Child was perfectly normal before this episode and there was no similar history or any other serious health ailment in the past. On examination child had Grade 3/5 power in both lower limbs and 4/5 power in right hand. Deep tendon jerks were brisk (knee and ankle) and Plantar reflex was flexor on both sides. Tone was decreased in both lower limbs at ankle, knee
and hip joints. Muscles were non tender. No cranial nerve involvement was seen. MRI Brain, Complete haemogram, Platelet and Eosinophils count, Liver function tests, Kidney function tests (including serum electrolytes), Serum Calcium, Fasting blood sugar, X Ray (AP and Lateral) of lumbosacral spine and cervical spine, Thyroid profile, CPK levels, Lipid profile and Urine examination were done and were all within normal limits except Hb was mildly low (11.1 gm%). Psychiatric evaluation and Fundus examination were also normal. No treatment was given and all ayurvedic drugs were withdrawn. Child dramatically improved and was fully normal neurologically within 2 days of hospitalization. Patient was advised to go for further evaluation (for nerve conduction, myography, toxic screen for drugs) at higher centre but he refused. Patient was discharged on 25/4/2016. Patient did not take any ayurvedic drugs during stay in hospital and was advised the same at discharge. Patient did not come for follow up.

Discussion

Scientifically, Brahmi is known as Bacopa Monnieri L. Pennell [1,2]. The herb has been mentioned in several Ayurvedic. Brahmi growing in contaminated areas may be toxic to health when consumed by humans [9]. Bacopa Monnieri, Ashwagandha, Clitoria ternatea, and Asparagus racemosus; touted to be synergistic with each other in at least one (independent) study [10]. Bacopa Monnieri, at 125mg (45% Bacosides) has been implicated in working synergistically with one of the four (or more) following ingredients, Curcumin, Green Tea Catechins, Ashwagandha and Milk Thistle [11]. Similarly side effects could also be additive though studies regarding this are lacking. Animal studies have used doses up to 80mg/kg bodyweight for up to 8 weeks and noted no biochemical side effects. One study used 250mg/kg bodyweight [12] and did not note any metabolic abnormalities whereas another study using this same dose in male mice for 56 days noted no significant health effects, but did notice anti-fertility actions by impairing sperm function, which was reversed 56 days after cessation of Bacopa [13]. One study using 300mg daily in older adults noted more gastrointestinal side-effects (cramping and nausea) than placebo [14]. Other studies also note upset stomachs that are routinely different than placebo [15, 16] and one study noted increased diarrhea [17]. At this moment in time, these remain the only adverse effect noted in humans. No significant case studies exist. Convolvulus pluricaulis (of the family Convolvulaceae and synonymous with Convolvulus microphyllus) is one of four plants that is referred to as Shankhapushpi, and appears to be the 'true' form of Shankhapushpi according to the Ayurvedic Pharmacopoeia [18]. No conspicuous information on toxicity of CP is available so far. The LD50 of the whole extract of C. microphyllus by oral administration was found to be 1250 (1000-1400) mg/kg. Mice treated with the extract showed a sedative effect at doses greater than 200 mg/kg and reflected a moderate to marked decrease in locomotor activity which lasted 1-2 h. The decrease in motor activity due to spontaneous motor activity was observed during the study. At higher dose (more than 1 g/kg) animals died due to respiratory distress [19].

Withania somnifera (of the family solanaceae) is a highly esteemed medicinal herb in Ayurveda and most popularized as Ashwagandha. While the root extract of ashwagandha appears to be virtually nontoxic at this point in time, high doses of isolated Withaferin A (the anticancer molecule) do possess a toxicity; in worst scenarios, it is about 4-fold higher than the therapeutic dose and difficult to reach via the root extract. In vitro results suggest no toxicity to human blood cells with standard doses of the extract [20] although the dose of Withaferin A that is known to be toxic to healthy cells also appears to cause erythrocytic cell death [21]. It acts as a mild central nervous system depressant. It is generally safe when taken in the prescribed dosage range [22]. Large doses have been shown to cause gastrointestinal upset, diarrhea, and vomiting. Withania somnifera stimulates the thyroid leading to thyrotoxicosis in some humans [23] and in mice [24,25].

Our patient was on Tablet Brahmi Bati by Baidnath (1 tablet twice daily), Tab Smritika (1 tablet twice daily) and Tab Seretone by Indian Herbal Remedies (1 tablet twice daily). These all were given in adult doses (as mentioned on the medicines strip/box). All three of them had Brahmi and Shankhpushpi in adult dosage while 2 of them had Ashwagandha in adult dosage.

Though the literature regarding various research studies and trials regarding in depth analysis of various side effects is lacking, it is possible that due to adult doses being given and that too three times (if form of 3 different tablets) our case developed this episode of transient paralysis. Other possibility is that paralysis was due to synergist actions of multiple drugs. Or may be intake of these drugs was an incidental finding.
Parents of the case refused to go to higher centers for further tests and studies and thereby relationship of these drugs with paralysis episode couldn’t be confirmed. Further human studies and trials are necessary to confirm or refute our observation in this case.

Funding: Nil, Conflict of interest: None initiated.
Permission from IRB: Yes

References

1. USDA, Bacopa Monnieri information from NPGS/GRIN Proc. Acad. Nat. Sci. Philadelphia 98:94. 1946 http://www.ars.grin.gov/cgi-bin/npgs/html/taxon.pl?102292.

2. The Wikipedia Encyclopedia http://en.wikipedia.org/wiki/Bacopa_monnieri.

3. Dr. David Frawley & Dr. Vasant Lad, Yoga of Herbs. Lotus press 2001, 239-241.

4. Pole S. Ayurvedic medicine: the principles of traditional practice. Elsevier Health Sciences; 2006.

5. D. sudharani, K. L. Krishna, K. Deval, A. K. Safia and Priya,“Pharmacological profiles of Bacopa monnieri: a review” Int J Pharm. 2011;1(1):15-23.

6. Deocaris CC, Widodo N, Wadhwa R, Kaul SC. Merger of ayurveda and tissue culture-based functional genomics: inspirations from systems biology. Journal of translational medicine. 2008 Mar 18; 6 (1):1. doi:10.1186/1479-5876-6-14.

7. Modak M, Dixit P, Londhe J, Ghaskadbi S, Devasagayam TP. Indian herbs and herbal drugs used for the treatment of diabetes. J Clin Biochem Nutr. 2007 May;40(3):163-73. doi: 10.3164/jcbn.40.163.

8. [No authors listed] Monograph. Withania somnifera. Altern Med Rev. 2004 Jun;9(2):211-4.

9. Mishra S, Srivastava S, Dwivedi S, Tripathi RD. Investigation of biochemical responses of Bacopa monnieri L. upon exposure to arsenate. Environ Toxicol. 2013 Aug;28(8):419-30. doi: 10.1002/tox.20733. Epub 2011 Jun 7.

10. Ramanathan M, Balaji B, Justin A. Behavioural and neurochemical evaluation of Perment an herbal formulation in chronic unpredictable mild stress induced depressive model. Indian J Exp Biol. 2011 Apr;49(4):269-75.

11. Velmurugan K, Alam J, McCord JM, Pugazhenthhi S. Synergistic induction of heme oxygenase-1 by the components of the antioxidant supplement Protandim. Free Radic Biol Med. 2009 Feb;46(3):430-40. doi: 10.1016/j.freeradbiomed.2008.10.050. Epub 2008 Nov 17.

12. Kapoor R, Srivastava S, Kakkar P. Bacopa monnieri modulates antioxidant responses in brain and kidney of diabetic rats. Environ Toxicol Pharmacol. 2009 Jan; 27(1):62-9. doi: 10.1016/j.etap.2008.08.007. Epub 2008 Sep 2.

13. Singh A, Singh SK. Evaluation of antifertility potential of Brahmi in male mouse. Contraception. 2009 Jan;79(1):71-9. doi: 10.1016/j.contraception. 2008.07.023. Epub 2008 Sep 18. See 1 citation found using an alternative search:

14. Morgan A, Stevens J Does. Bacopa monnieri improve memory performance in older persons? Results of a randomized, placebo-controlled, double-blind trial. J Altern Complement Med. 2010 Jul;16(7):753-9. doi: 10.1089/acm.2009.0342.

15. Vollala VR, Upadhyia S, Nayak S. Enhanced dendritic arborization of amygdala neurons during growth spurt periods in rats orally intubated with Bacopa monnieri extract. Anat Sci Int. 2011 Dec;86(4):179-88. doi: 10.1007/s12565-011-0104-z. Epub 2011 Mar 17.

16. Carlo Calabrese, N.D., M.P.H. William L. Gregory, Ph.D., Michael Leo, Ph.D., Dale Kraemer, Ph.D., Kerry Bone, F.N.I.M.H., F.N.H.A.A., and Barry Oken, M.D. Effects of a standardized Bacopa monnieri extract on cognitive performance, anxiety, and depression in the elderly: a randomized, double-blind, placebo-controlled trial J Altern Complement Med. 2008 Jul; 14(6): 707–713. doi: 10.1089/acm.2008.0018.

17. Stough C, Downey LA, Lloyd J, Silber B, Redman S, Hutchison C, Wesnes K, Nathan PJ. Examining the nootropic effects of a special extract of Bacopa monnieri on human cognitive functioning: 90 day double-blind placebo-controlled randomized trial. Phytother Res. 2008 Dec;22(12):1629-34. doi: 10.1002/ptr.2537.

18. Neeraj K. Sethiya, Ashish Trivedi, Mayur B. Patel, and S. H. Mishra. An update on Shankhpushpi, a cognition-boosting Ayurvedic medicine. J Adv Pharm Technol Res. 2010 Oct-Dec;1(4): 388–395.doi:10.4103/0110-5558.76437.
19. Pawar SA, Dhuley JN, Naik SA. Neuropharmacology of an extract derived from Convolvulus microphyllus. Pharm Biol. 2001;39:253–258.

20. M. Owais, K.S. Sharad, A. Shehbaz, M. Saleemuddin Antibacterial efficacy of Withania somnifera (ashwagandha) an indigenous medicinal plant against experimental murine salmonellosis. Phytomedicine. 2005 Mar;12(3):229-35.

21. Jilani K, Lupescu A, Zbidah M, Shaik N, Lang F. Withaferin A-stimulated Ca2+ entry, ceramide formation and suicidal death of erythrocytes. Toxicol In Vitro.2013 Feb;27(1):52-8. doi: 10.1016/j.tiv.2012.09.004. Epub 2012 Sep 16.

22. Aphale AA, Chhibba AD, Kumbhakarna NR, Mateenuddin M, Dahat SH. Subacute toxicity study of the combination of ginseng (Panax ginseng) and ashwagandha (Withania somnifera) in rats: a safety assessment. Indian J Physiol Pharmacol. 1998 Apr; 42(2):299-302.

23. Van der Hooft CS, Hoekstra A, Winter A, de Smet PA, Stricker BH. [Thyrotoxicosis following the use of ashwagandha]. Ned Tijdschr Geneeskd. 2005 Nov 19; 149(47):2637-8.

24. Panda S, Kar A. Changes in thyroid hormone concentrations after administration of ashwagandha root extract to adult male mice. J Pharm Pharmacol. 1998 Sep; 50(9):1065-8.

25. Panda S, Kar A. Withania somnifera and Bauhinia purpurea in the regulation of circulating thyroid hormone concentrations in female mice. J Ethnopharmacol. 1999 Nov 1;67(2):233-9.

How to cite this article?

Vinayak R, Behal M. Transient acute paralysis (? Toxicity of ayurvedic medications)- a Case Report. Int J Med Res Rev 2016;4 (6):1042-1045.doi: 10.17511/ijmrr.2016.i06.30.