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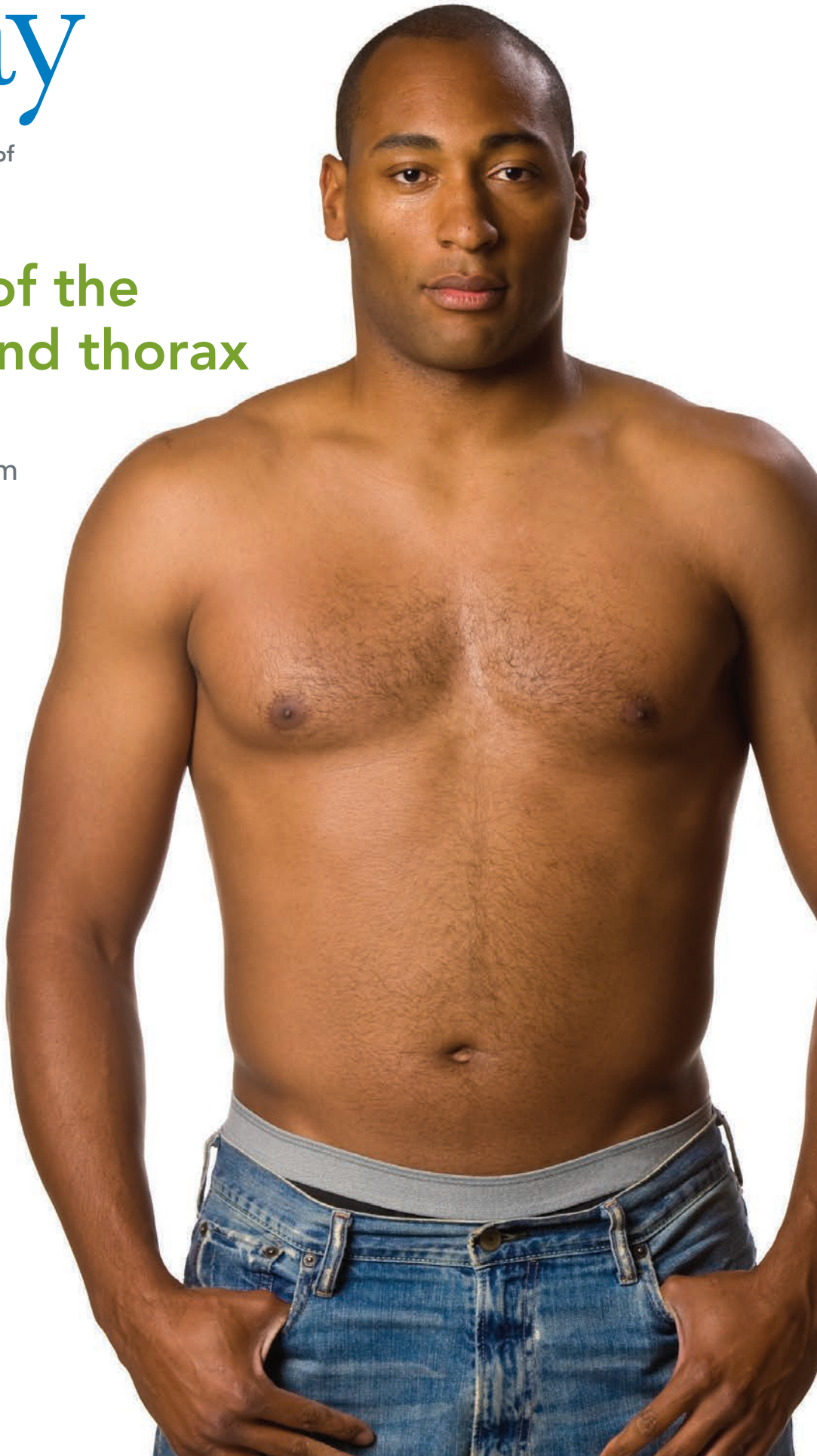


CPD: Autism and the visceral connection – An overview of recently published research

by Dr Ioná Bramati-Castellarin PhD, BSc (Hons) Ost Med DO,ND

CONTINUOUS PROFESSIONAL DEVELOPMENT

In this article, the author discussed the research behind the effectiveness of osteopathic visceral treatment of gastrointestinal (GI) signs and symptoms as well as behaviour patterns in autistic children via manipulation of the 'gut-brain axis', and may represent a significant contribution to the evidence base for osteopathic treatment.

This article is designed to be a CPD learning resource for osteopaths regarding visceral osteopathic treatment. After reading the article, test your understanding by completing the multiple choice questions at the end (the answers can be found on the iO website at: http://www.osteopathy.org/for-osteopaths/clinical-development/cpd-articles/) along with a reflective practice form that you can download, fill in and print off for your CPD file (B2 (1.11), B4 (1.2)), which can be found at : http://www.osteopathy.org/for-osteopaths/clinical-development/making-the-most-of-your-cpd/.

This article is designed for information purposes only and should not substitute appropriate training. Always remember your limitations when offering advice.

Relevant references in the Osteopathic Practice Standards are:
Knowledge, skills and performance
- B2 (1.1) B4 (1.1), B4 (1, 1.2.5)

Professionalism:
- D1 (1.2)

Dr Ioná Bramati-Castellarin was recently awarded a PhD by The University of Westminster in conjunction with the British College of Osteopathic Medicine (BCOM) on the effects of visceral osteopathy in autistic children. The project was approved for collaboration with King's College Hospital, London and endorsed by the National Autistic Society and sponsored by BCOM via a grant from the British Naturopathic and Osteopathic Association. Here she shares information on autism, visceral osteopathy and some results of her recent publication - Repeat-measures longitudinal study evaluating behavioural and gastrointestinal symptoms in children with autism before, during and after visceral osteopathic technique (VOT).
Bramati-Castellarin, I et al. Journal of Bodywork and Movement Therapies – In Press 2016.

Autism or autism spectrum disorder (ASD) is classified as a pervasive developmental disorder (PDD), with abnormal or impaired development in reciprocal social interactions, abnormal or impaired social communication, and social imagination. This classification is utilised in both the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM –IV) and the International Statistical of Diseases and Related Health Problems, 10th edition (ICD-10), that describe the international standardised classifications for psychiatric diseases and disabilities (World Health Organization, 2004).

Autism is a multifactorial condition with unclear aetiology and no specific treatment. For many years autism was only seen as a condition that would be managed by mental health professionals. However, over the past 15 years studies have suggested a possible link between autistic behavioural dysfunction and gastrointestinal (GI) signs and symptoms. Authors such as Forsythe et al. (2010), Jyonouchi et al. (2005), Reichelt and Knivsberg (2009) have suggested that typical autistic behavior may be exacerbated due to gut inflammatory reactions suggesting a possible gut-brain axis. In consequence the scope for management therapies has widened.

There is no defined protocol in place for treatment and/or management of autism. In 2014, NICE released the quality standard 51 (NICE, 2014), an updated quality standard recommendation for the assessment, diagnosis and treatment of children, young people and adults diagnosed as autistic. This document follows the criteria of the Autism Act released in 2009 which requires that each local

authority in England and Wales creates provision in health and social care for individuals diagnosed as autistic (NICE, 2014).

NICE (2014) quality standard 51 recommends that individuals diagnosed as autistic should receive personalised care developed and implemented by the individual's carer, their family, and the autism team. The needs of autistic individuals vary according to where they fall within the autistic spectrum. Some individuals require a wider range of support than others. Hence, quality standard 51 was developed to ensure the best outcome possible for individuals diagnosed as autistic, based on their personal needs.

Over the past 15 years, the increased awareness of research into autism has helped broaden the intervention modalities to help with managing symptoms associated with the condition. However, there is not yet a cure and no specific treatment developed for the condition.

A Summary of the Symptoms of Autism

Behaviour
Failure to develop eye to eye contact; failure to develop social interactions; failure to develop communication skills; lack of pretend play and imaginative activities; repetitive stereotyped activities (staring at lights, twisting and turning objects and switching lights on and off over and over again).

Communication
Echolalia (parrot-like copying of other people's speech); altered rhythm and melody of speech; high-pitched or monotonous speech, confusion over use of personal pronouns (substitution of 'I' for 'you'); failure to initiate, pursue, or terminate conversations; difficulty interpreting other people's tone of voice, body posture and facial expression during a conversation; failure to acquire speech.
Sensory Motor Joint laxity and hypotonia; clumsiness and apraxia (inability to make skilled movements with accuracy); toe walking; finger flicking; flapping of arms and hands; running in circles; self-injurious behaviour.

Neurologic
A third present with epilepsy

Gastrointestinal
Abdominal distension and pain; constipation; chronic diarrhoea; foul-smelling stools; and gaseousness.

Toxic/Allergic
Food intolerance; sensitivity to food containing gluten and/or casein.

Compiled from Tanguay (1999), (Wing, 1997, World Health Organisation, 1992, American Psychiatric Association, 1994).

Autism & Gastrointestinal Symptoms
Seventy percent of patients with an autistic disorder may present with GI symptoms, such as abdominal distension and pain, constipation, chronic diarrhoea, foul-smelling stools and/or flatulence (Lewis, 1998, Shattock and Savery, 1996, Jyonouchi et al., 2005, Jyonouchi et al., 2011). Recent studies suggest that a cognitive deficit in autistic children may be linked to these GI symptoms (Horvath, 2000, Horvath and Perman, 2002, Koves et al., 2004, Valicenti-McDermott et al., 2008). Nikolov et al. (2009) reported a link between worsening behavioural symptoms and the presence of GI symptoms, specifically diarrhoea and constipation.

The so called 'gut-brain axis' within autism has been reviewed by White (2003), who suggested that the GI pathology may be central to the aetiology of autism. Another study concluded that GI symptoms may be a co-morbidity of autism, and some of the autism behavioural symptoms may be the result of the interaction between the brain and GI function (Valicenti-McDermott et al., 2006). The bi-directional axis that has been suggested between the brain and gut could potentiate or even generate behavioural symptoms in autistic children. In turn, this could influence neuroplastic changes in either the CNS or non-neuronal elements (Gershon, 1999, Dong and Greenough, 2004, Vasina et al., 2006). The possibility of a gut-brain axis co-morbidity in autism has only recently been postulated (Forsythe et al., 2010, Mayer and Tillisch, 2011, Mayer et al., 2006) but it is receiving increasing research attention.

The role of Visceral Osteopathy
Visceral osteopathy is used to optimise blood and lymphatic supply to the internal organs. The viscera are a collection of organs in the abdominal cavity that generally respond to the internal physiological motion guided by the involuntary movement of the diaphragm in respiration; the internal motility of the viscera such as peristaltic movement; cardiac movement and blood and lymph circulation; and via skeletal movement such as walking, running or exercising (Barral and Mercier, 2006, Barral and Mercier, 2007, Stone, 1999). This motion and motility and the influence on the viscera is constantly present throughout life.

A recent study on the effectiveness of visceral osteopathic techniques (VOTs) was performed on IBS patients with positive results. Attali et al. (2013) considered 31 IBS patients in a randomized cross-over placebo controlled study. The qualitative effects of depression, constipation, diarrhoea, abdominal distension and abdominal pain using visual analogue scales (VAS), and rectal sensitivity using a distension balloon, before and after treatment were evaluated. The treatment group received general visceral osteopathy sessions as well as locally applied techniques in specifically sensitive areas of the abdomen and gentle manipulation to the sacral area. The placebo group received treatment in the same areas of the abdomen with a light, non-therapeutic, pressure. The authors reported that VOT ameliorates diarrhoea, abdominal distension and pain as well as rectal sensitivity. The positive effects of the therapy were long lasting and the symptom scores continued to be low at one year follow-up with no further treatment Attali et al. (2013).

Recent Research Study using Visceral Osteopathic Techniques (VOT) with children suffering from Autism
The rationale for applying VOT to autistic children suffering from GI signs and symptoms (Bramati-Castellarin et al., 2016) rests with its holistic and low invasive approach. The use of touch and mobilisation of organs in an attempt to restore function has the potential to affect the Enteric Nervous System (ENS) and possibly help to restore the gut-brain function (Mayer and Tillisch, 2011). Autistic children are in a constant state of 'stress' purely due to the nature of the condition. Any positive effect of VOT on intestinal

function has the potential to decrease GI signs and symptoms and this may be translated positively into a reduction in typical autistic behaviour.

Objectives of the Current Study – Brief Overview

The objective of the published study (Bramati-Castellarin et al., 2016) was to investigate the effect of VOT on GI signs and symptoms as well as behaviour patterns in autistic children. Two outcome measures were used during the study, 1. questionnaires given to parents to assess GI signs and symptoms and behaviour patterns and 2. biochemical markers in faecal material. However, only the results of the questionnaires will be discussed in this overview.

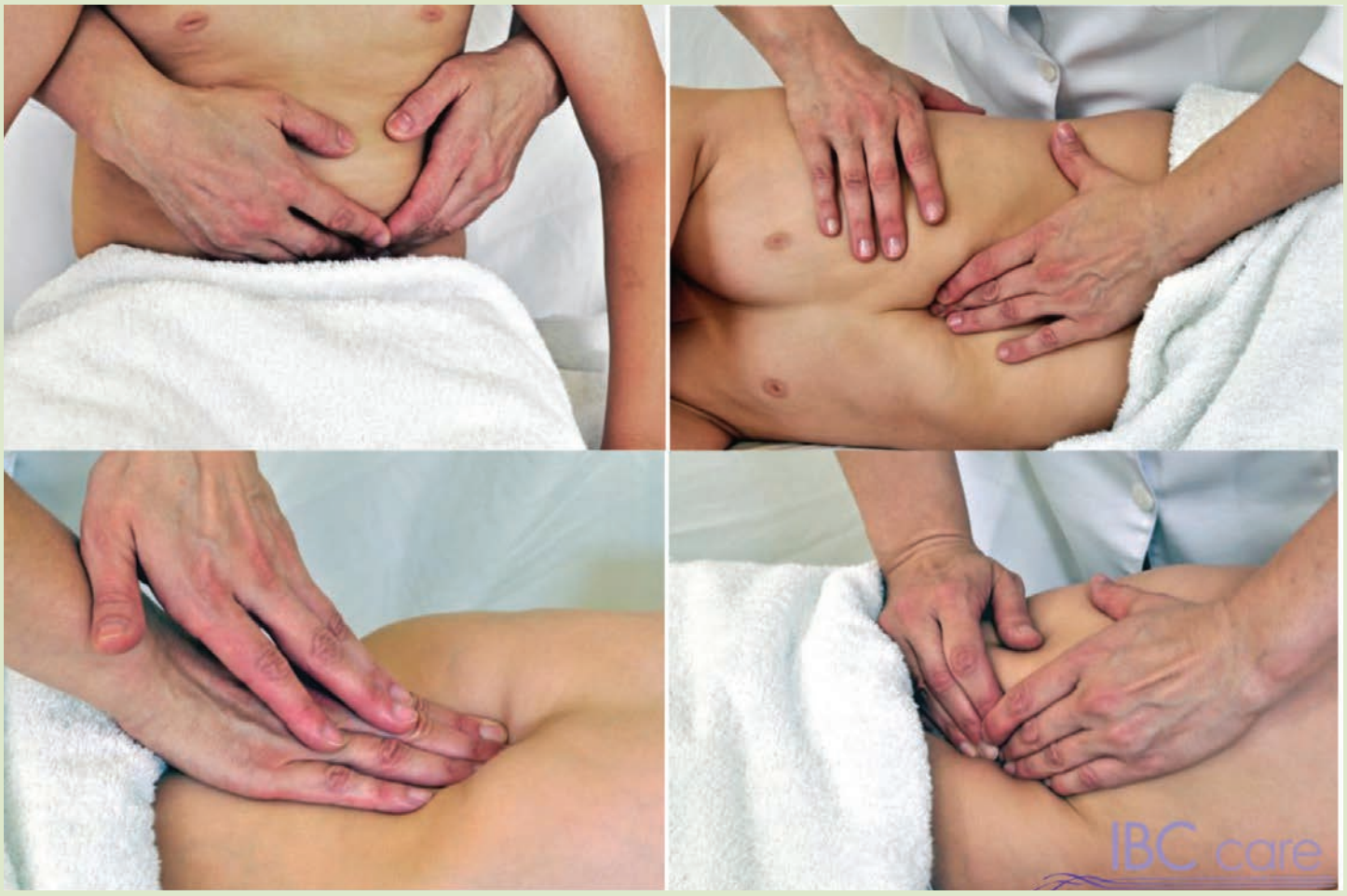
The study aimed to address the lack of low-invasive treatments to autistic children suffering from GI signs and symptoms. The possible connection between changing behaviour signs and symptoms and the gastrointestinal condition in these children, as well as the lack of an appropriate low-invasive gastrointestinal treatment led the researcher to study the possible effects of application of VOT in these autistic children. The methodology sought to investigate a possible link between changing behavioural symptoms and the GI system as suggested by Buie et al. (2010). Several authors such as Horvath et al. (1999), Forsythe et al. (2010), Jyonouchi et al. (2005), Reichelt and Knivsberg (2009), Walker et al. (2013), Nikolov et al. (2009) have also suggested a possible gut-brain axis that could be immunological, inflammatory or genetic in nature.

The subjects acted as their own controls; the control/baseline period covered six weeks during which time no treatment or intervention was given, but weekly questionnaires were completed. During this control/baseline period the researcher had no contact with the subjects except by text message reminders to complete the questionnaires.

The baseline data generated from this period (control/baseline) were then compared with the results obtained during treatment (treatment period) and following treatment (post-treatment period).

Four questionnaires were completed during the six week treatment period of the clinical trial. The intervention comprised of six osteopathic sessions, using VOT to the abdominal area. The interventions were a week apart.

At each treatment session, the parent was asked whether there were any changes in the GI and/or behavioural symptoms of their child following the previous session or any changes to diet, pharmacology or health issues such as infection. This monitoring during each treatment was also designed help to highlight any trends. Information provided by the parents was recorded on the treatment notes, with the case history.



Visceral Osteopathic Techniques (VOT) – Intervention

All subjects were treated using VOTs over the whole abdominal region, including the duodenum, ileo-caecal valve, sigmoid colon, pancreas and general abdominal region. The treatment protocol was designed using standard osteopathic techniques.

Measures of Outcome

To measure outcomes for the GI signs and symptoms and behaviour, the S.O.S questionnaires were completed, pre-treatment (control/baseline), during the treatment period and post treatment.

The visceral techniques chosen for this research project aimed to increase circulation, detoxification (biochemical turnover), peristalsis and gut emptying, in addition to aiding neuro-regulatory responses via the ENS and thereby positively influencing the GI and behavioural function of the subjects.

The results of the research

There was a significant decrease in signs and symptoms when comparing the control/baseline period, the treatment period and the post treatment period.

The data analysis of the 'vomiting', 'poor appetite' and 'lack of eye contact' parameters demonstrated statistically significant improvements, suggesting that the use of VOTs may be of benefit to children with autism.

The novel approach of using VOTs to treat children with autism, has indicated that some promising positive results follow this low-invasive form of treatment and could have a significant and important impact on the quality of life and wellbeing of children with autism who also suffer GI symptoms. The results may be considered to add weight to the gut-brain axis hypothesis postulated in recent papers (Forsythe et al., 2010, Mayer and Tillisch, 2011, Mayer et al., 2006, Reichelt and Knivsberg, 2009).

Future

This research is the first published investigating the possible ways to integrate osteopathy in the management of behavioural and GI symptoms of autistic children. The positive findings generated from the use of VOT in autistic children might possibly be implemented in clinical osteopathic settings. Moreover, visceral osteopathic treatment could become part of the treatment procedures within special schools for autistic children alongside other therapies such as speech therapy, behavioural therapy and occupational therapy although future studies are necessary to determine whether the outcome measures used for this study may be replicated.

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For more information about Dr Bramati-Castellarin's research and upcoming conferences visit www.ibccare.co.uk

References

AMERICAN PSYCHIATRIC ASSOCIATION 1994. Diagnostic and statistical manual of mental disorders : DSM-IV, Washington, DC, American Psychiatric Association.

ATTALI, T. V., BOUCHOUCHA, M. & BENAMOUZIG, R. 2013. Treatment of refractory irritable bowel syndrome with visceral osteopathy: short-term and long-term results of a randomized trial. J Dig Dis, 14, 654-61.

BARRAL, J. & MERCIER, P. 2006. Visceral Manipulation (Revised Edition), Eastland Press.

BARRAL, J. P. & MERCIER, P. 2007. Visceral manipulation II, Seattle, Eastland Press.

BRAMATI-CASTELLARIN, I., PATEL, V. B. & DRYSDALE, I. P. 2016. Repeat-measures longitudinal study evaluating behavioural and gastrointestinal symptoms in children with autism before, during and after visceral osteopathic treatment (VOT). Journal of Bodywork and Movement Therapies.

BUIE, T., CAMPBELL, D., FUCHS, G. R., FURUTA, G., LEVY, J., VANDEWATER, J., WHITAKER, A., ATKINS, D., BAUMAN, M., BEAUDET, A., CARR, E., GERSHON, M., HYMAN, S., JIRAPINYO, P., JYONOUCHI, H., KOOROS, K., KUSHAK, R., LEVITT, P., LEVY, S., LEWIS, J., MURRAY, K., NATOWICZ, M., SABRA, A., WERSHIL, B., WESTON, S., ZELTZER, L. & WINTER, H. 2010. Evaluation, diagnosis, and treatment of gastrointestinal disorders in individuals with ASDs: a consensus report. Pediatrics: Official Journal of the American Academy of Pediatrics, 125, S1-18.

DONG, W. K. & GREENOUGH, W. T. 2004. Plasticity of nonneuronal brain tissue: roles in developmental disorders. Ment Retard Dev Disabil Res Rev, 10, 85-90.

FORSYTHE, P., SUDO, N., DINAN, T., TAYLOR, V. H. & BIENENSTOCK, J. 2010. Mood and gut feelings. Brain Behav Immun, 24, 9-16.

GERSHON, M. D. 1999. The enteric nervous system: a second brain. Hosp Pract (1995), 34, 31-2, 35-8, 41-2 passim.

HORVATH, K. 2000. Secretin treatment for autism. N Engl J Med, 342, 1216; author reply 1218.

HORVATH, K., PAPADIMITRIOU, J. C., RABSZTYN, A., DRACHENBERG, C. & TILDON, J. T. 1999. Gastrointestinal abnormalities in children with autistic disorder. J Pediatr, 135, 559-63.

HORVATH, K. & PERMAN, J. A. 2002. Autism and gastrointestinal symptoms. Curr Gastroenterol Rep, 4, 251-8.

JYONOUCHI, H., GENG, L., RUBY, A., REDDY, C. & ZIMMERMAN-BIER, B. 2005. Evaluation of an association between gastrointestinal symptoms and cytokine production against common dietary proteins in children with autism spectrum disorders. J Pediatr, 146, 605-10.

JYONOUCHI, H., GENG, L., STRECK, D. L. & TORUNER, G. A. 2011. Children with autism spectrum disorders (ASD) who exhibit chronic gastrointestinal (GI) symptoms and marked fluctuation of behavioral symptoms exhibit distinct innate immune abnormalities and transcriptional profiles of peripheral blood (PB) monocytes. J Neuroimmunol, 238, 73-80.

KOVES, K., KAUSZ, M., RESER, D., ILLYES, G., TAKACS, J., HEINZLMANN, A., GYENGE, E. & HORVATH, K. 2004. Secretin and autism: a basic morphological study about the distribution of secretin in the nervous system. Regul Pept, 123, 209-16.

LEWIS, L. S. 1998. Special Diets for Special Kids: Understanding and Implementing a Gluten and Casein Free Diet to Aid in the Treatment of Autism and Related Developmental Disorders, Future Horizons, Incorporated.

MAYER, E. A. & TILLISCH, K. 2011. The brain-gut axis in abdominal pain syndromes. Annu Rev Med, 62, 381-96.

MAYER, E. A., TILLISCH, K. & BRADESI, S. 2006. Review article: modulation of the brain-gut axis as a therapeutic approach in gastrointestinal disease. Aliment Pharmacol Ther, 24, 919-33.

NICE 2014. Autism - NICE quality standard 51.

NIKOLOV, R., BEARSS, K., LETTINGA, J., ERICKSON, C., RODOWSKI, M., AMAN, M., MCCRACKEN, J., MCDOUGLE, C., TIERNEY, E., VITIELLO, B., ARNOLD, L., SHAH, B., POSEY, D., RITZ, L. & SCAHILL, L. 2009. Gastrointestinal symptoms in a sample of children with pervasive developmental disorders. J Autism Dev Disord. ,

39, 405-13.

REICHELT, K. L. & KNIVSBERG, A. M. 2009. The possibility and probability of a gut-to-brain connection in autism. Ann Clin Psychiatry, 21, 205-11.

SHATTOCK, P. & SAVERY, D. 1996. Urinary Profiles in People with Autism: possible implications and relevance to other research.: Autism Research Unit - School of Health and Science.

STONE, C. 1999. Fluid Dynamics and Boby Movement. In: Science in the Art of Osteopathy - Osteopathic Principles and Practice, Cheltenham, Stanley Thornes Publishers Ltd.

TANGUAY, P. 1999. Undestanding Autism - a work in progress. Journal of Psychiatry and Neuroscience, 24, 96-96.

VALICENTI-MCDERMOTT, M., MCVICAR, K., RAPIN, I., WERSHIL, B. K., COHEN, H. & SHINNAR, S. 2006. Frequency of gastrointestinal symptoms in children with autistic spectrum disorders and association with family history of autoimmune disease. J Dev Behav Pediatr, 27, S128-36.

VALICENTI-MCDERMOTT, M. D., MCVICAR, K., COHEN, H. J., WERSHIL, B. K. & SHINNAR, S. 2008. Gastrointestinal symptoms in children with an autism spectrum disorder and language regression. Pediatr Neurol, 39, 392-8.

VASINA, V., BARBARA, G., TALAMONTI, L., STANGHELLINI, V., CORINALDESI, R., TONINI, M., DE PONTI, F. & DE GIORGIO, R. 2006. Enteric neuroplasticity evoked by inflammation. Auton Neurosci, 126-127, 264-72.

WALKER, S. J., FORTUNATO, J., GONZALEZ, L. G. & KRIGSMAN, A. 2013. Identification of unique gene expression profile in children with regressive autism spectrum disorder (ASD) and ileocolitis. PLoS One, 8, e58058.

WHITE, J. F. 2003. Interstinal Pathophysiology in Autism. Experimental Biology and Medicine 639-649.

WING, L. 1997. The Autism Spectrum. Lancet, 350, 1761-1766.

WORLD HEALTH ORGANISATION 1992. The ICD-10 Classification of Mental and Behavioural Disorders., WHO.

WORLD HEALTH ORGANIZATION 2004. International statistical classification of diseases and related health problems.

Test your knowledge:

The following quiz will help to reflect on what you have learned and test your understanding of the article. You can find the answers at the end of the online version of this article in the clinical development section of the iO website, which can be found by clicking the For Osteopaths tab. You will also find a reflective practice form on the website for you to complete and file as a record of your CPD.

ONLY 1 answer is correct,

1. What is a common behavioural symptom in autism?
a. Good communication
b. Failure to develop eye contact
c. Good imaginative play
d. Good social interaction

2. Autism is classified as a pervasive developmental disorder (PDD) by the:
a. DSM – L
b. DSM – VI
c. DSM – X
d. DSM – IV

3. What axis in the body may be connected to the exacerbation of abnormal behaviour in autistic individuals?
a. Sagittal Axis
b. Frontal Axis
c. Coronal Axis
d. Gut-Brain Axis

4. NICE qualitative standard 51 recommends:
a. The individuals with autism receive the exact same treatment approach
b. The treatment should be tailor made to individual cases
c. To follow a specific treatment protocol
d. That individuals diagnosed as autistic should receive only behavioural intervention

5. What is the percentage of autistic children suffering from GI symptoms according to published research?
a. 70%
b. 10%
c. 56%
d. 20%

6. The recent published research suggested that visceral osteopathy influenced positively:
a. Autistic children coordination
b. Autistic children social skills
c. Autistic children eye contact
d. Autistic children echolalia

7. True or False: The novel approach of using VOTs to treat children with autism, has indicated that some promising positive results follow this low-invasive form of treatment and could have a significant and important impact on the quality of life and wellbeing of children with autism who also suffer GI symptoms

8. Which of the below is not suggested as possibly involved in the nature of the gut-brain axis in autism?
a. Immunological
b. Inflammatory
c. Genetic
d. Neurological

9. True or False: The recent research outcome measures aimed to affect neuro-regulatory responses by improving gut circulation and peristaltic motion.

10. Which of the following gastrointestinal symptoms is not a classic presentation in autism?
a. jaundice
b. abdominal distension and pain
c. constipation
d. chronic diarrhoea