Pica and the obsessivecompulsive spectrum disorders

Dan J. Stein, Colin Bouwer, Ben van Heerden

Background. The concept of a spectrum of obsessivecompulsive related disorders may have clinical and research heuristic value in the approach to disorders similar to obsessive-compulsive disorder (OCD) in respect of phenomenology and psychobiology. Like other repetitive and ritualistic behaviours, pica may be postulated to fall at times on this spectrum.

Methods. Five cases of pica seen at our clinics are presented here in order to test this hypothesis. Phenomenology, neurobiology (where available) and pharmacotherapy data are provided in order to consider a possible relationship with OCD and OCD spectrum disorders.

Results. In 2 of the cases, pica appeared to be a compulsion and patients had additional symptoms which met diagnostic criteria for OCD. In 2 of the cases, the clinical picture and neurobiological data were reminiscent of an impulse control disorder. Four of the 5 patients responded to treatment with a serotonin re-uptake inhibitor (SRI).

Conclusion. These results are consistent with a hypothesis that at least some cases of pica may usefully be conceptualised as lying within a compulsive-impulsive spectrum of symptoms and disorders.

S Afr Med J 1996; 86: 1586-1592.

Recent advances in the study of obsessive-compulsive disorder (OCD) include rigorous characterisation of its phenomenology, gradual delineation of the mediating neuro-anatomy and neurochemistry, and the development of effective pharmacotherapeutic and psychotherapeutic interventions. Such successes have also led to increased attention to a range of disorders (including Tourette's syndrome, hypochondriasis and trichotillomania) where phenomenology is reminiscent of OCD, and where neurobiology and treatment response might also be thought to overlap with OCD. The concept of an obsessive-compulsive spectrum of disorders may have heuristic value in both clinical and research settings.

The notion of an obsessive-compulsive spectrum of disorders has, for example, contributed to current

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perspectives on a number of previously under-researched conditions. Body dysmorphic disorder, which is characterised by obsessive concerns about somatic features and by compulsive checking of the body, has therefore recently been postulated to respond selectively to treatment with serotonin re-uptake inhibitors (SRIs), as does OCD.⁵ Similarly, hair-pulling and severe nail-biting are self-injurious behaviours in which there may be ritualistic features, and controlled trials have now demonstrated that these respond selectively to the SRIs, ^{9,10} giving many patients with chronic symptoms hope for an effective treatment.

Pica has been defined as the persistent eating of nonnutritive substances.¹¹ The *Diagnostic and Statistical Manual* of *Mental Disorders* (*DSM-IV*) states that the typical substance ingested tends to vary with age. Infants and younger children may eat paint, plaster, string, hair or cloth; older children may eat animal droppings, sand, insects, leaves or pebbles; and adolescents and adults may eat clay or soil. Pica has been documented in association with pregnancy¹² as well as in association with mental retardation,¹³ schizophrenia,¹⁴ autism,¹⁵ and other psychiatric disorders.¹⁶ In addition, pica may be either a manifestation of iron deficiency, or a factor predisposing thereto.^{18,17}

Pica has not, however, often been linked to OCD. Zeitlin and Polivy¹⁸ presented a patient with coprophagia, and stated that this patient's symptoms met *DSM-IV* criteria for OCD and that these responded to formal behaviour therapy. However, the patient had no other symptoms of OCD and indeed the pica symptoms were closely related to a past history of abuse. Szabo et al.¹⁹ recently presented a case of pica thought to be secondary to iron-deficiency anaemia, and made the interesting speculation that pica may lie on the OCD spectrum of disorders. They did not, however, provide any neurobiological or pharmacological data from their case to support or refute this contention.

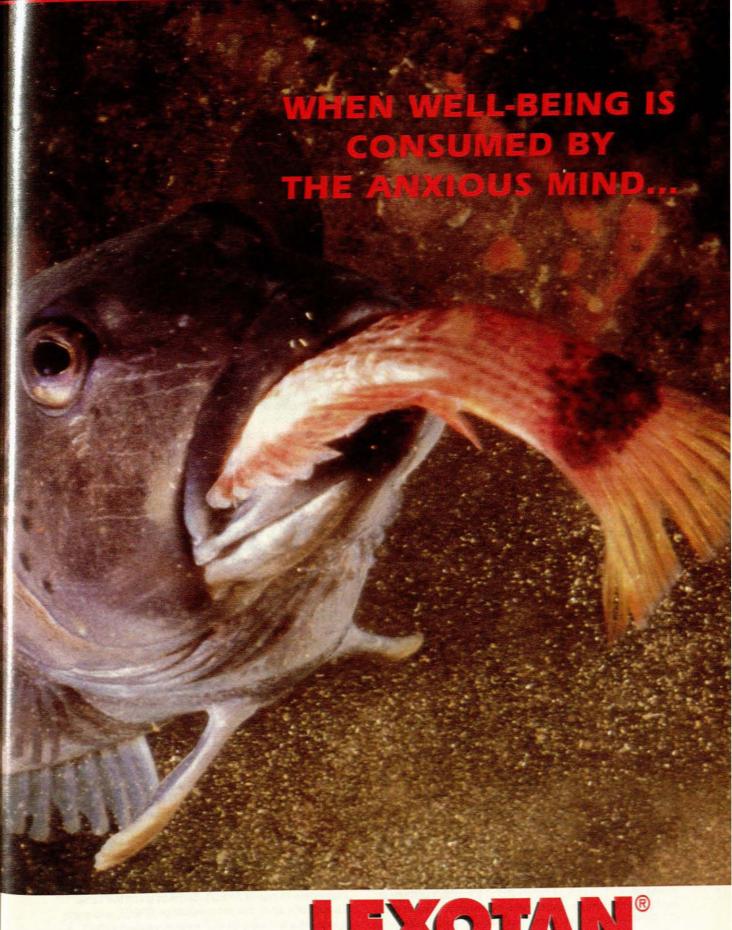
In this paper, we review the case material of 5 pica patients seen at our clinics in order to shed light on the hypothesis that pica lies within the obsessive-compulsive spectrum of disorders.

Methods

Five patients who presented to our outpatient anxiety disorder and OCD clinics with pica are described. Phenomenology, neurobiology (where available) and pharmacotherapy data are provided in order to consider a possible relationship with OCD and OCD spectrum disorders.

Case 1

An 18-year-old single woman presented with a history of OCD symptoms that had begun in early childhood. Symptoms included intrusive sexual thoughts, ritualistic mental reviewing and concerns with symmetry. Co-morbid disorders at the time of presentation included panic disorder with agoraphobia, social phobia and pica. Pica comprised eating of sand, which the patient described as one of the repetitive behaviours that she felt compelled to carry out. The patient's sister also had a history of panic disorder with agoraphobia, social phobia and pica. There was no evidence of anaemia or iron deficiency on laboratory investigation.



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The patient was treated with sertraline 200 mg daily. Panic attacks decreased rapidly; other symptoms responded more slowly. However, after 12 weeks of treatment there was also significant improvement in OCD, pica and social phobia.

Case 2

A 38-year-old man presented with OCD symptoms that had begun after puberty. The patient had obsessions about faecal contamination, and his rituals included washing and cleaning. Surprisingly, the patient also admitted to an urge to eat certain sorts of dry dog faeces, followed by purging. The patient described this as a behaviour for which he could give no sensible explanation, but which he felt compelled to do. There was no family history of OCD or pica. There was no evidence of anaemia or iron deficiency on investigation.

The patient was treated with citalopram 80 mg daily. There was a gradual response in OCD and pica symptoms. However, significant improvement in both was seen at 12 weeks.

Case 3

An 8-year-old boy presented for evaluation of symptoms of OCD that had begun 3 years earlier. History revealed that in addition to the classic obsessions and compulsions associated with counting, touching and symmetry, there was repetitive chewing of paper and crayons. The patient described this symptom as subjectively dissimilar to his counting, touching and symmetry rituals. He stated that the chewing (unlike the OCD symptoms) was not preceded by an irresistible urge or by increased tension, but simply that he enjoyed chewing paper and crayons. He did, however, note that once he began chewing, he would have to chew a set number of items — in the same way that he might have to touch particular objects a certain number of times. There was no family history of OCD or pica.

The patient was treated with clomipramine 75 mg daily. There was a gradual and significant decrease in OCD symptoms. However, the pica continued as before.

Case 4

A 34-year-old single woman presented with symptoms of OCD that had begun at age 17. These included washing and checking compulsions, as well as ego-dystonic sexual obsessions. There was also a history of hair-pulling from the scalp, eyebrows and pubic area. On presentation, the patient also acknowledged co-morbid symptoms of depression and pica. The pica comprised eating up to fifteen sticks of chalk per day. The patient described the hair-pulling and pica in similar terms, stating that both were preceded by an increase in tension, and followed by tension reduction and even gratification. There was no family history of OCD or pica, but the patient's brother had chronic motor tics. There was no evidence of anaemia or iron deficiency on laboratory investigation. The patient consented to a lumbar puncture in order to determine cerebrospinal 5-hydroxyindoleacetic acid (CSF5-HIAA) levels, and these proved to be abnormally low.

The patient was treated with clomipramine up to 300 mg daily for 12 weeks with no response in obsessions and compulsions, hair-pulling or pica, but with some improvement in depression. Medication was switched to citalopram 60 mg daily, which resulted in significant

improvement in depression by week 4, with subsequent significant improvement in OCD, hair-pulling and pica.

Case 5

A 45-year-old woman presented with a history of recurrent eating of newspapers. The patient stated that this symptom had begun during adolescence, and had continued to manifest itself during periods of stress. At such times, the patient felt an increased sense of tension, and she consciously chose to eat newspaper in order to decrease this sense of tension. She described this as an essentially pleasurable activity, although part of her worried about possible medical complications. Although the patient tended to eat the same part of the newspaper each time (the borders), there was no specific ritualistic pattern to the eating that she felt compelled to carry out.

There was no history of obsessions or compulsions. Although there were some symptoms of depression and anxiety at the time of presentation, the patient did not meet DSM-IV criteria for a major depressive episode or for any anxiety disorder. There was no evidence of anaemia or iron deficiency on laboratory investigation. There was no family history of OCD or pica.

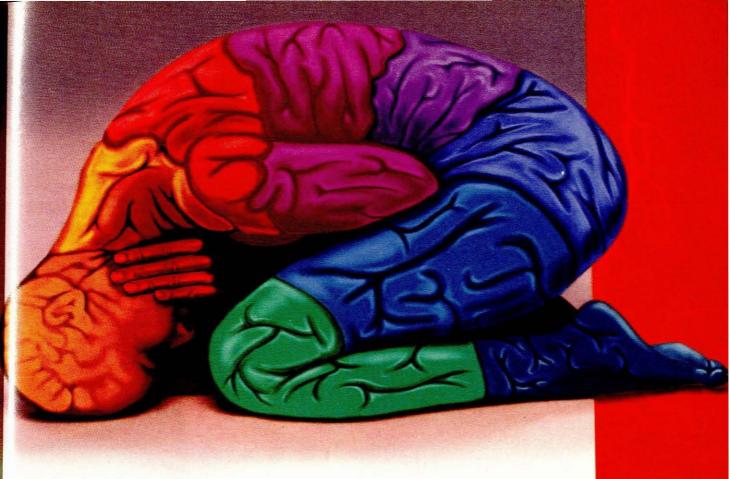
The patient consented to undergo single photon emission computed tomography (SPECT) of the brain before beginning a trial of an SRI. Five minutes prior to injection of 555 MBq (15 mCi) Tc-99m hexamethylpropyleneamine oxime, the patient was instructed to allow herself to think about chewing a newspaper and also to begin manipulating a piece of newspaper as she usually did prior to eating it. The patient continued with these thoughts and actions for 5 minutes after injection.

SPECT data were acquired using a dual detector gamma camera (Elscint, Helix), equipped with fanbeam collimators using the step-and-shoot mode and a circular orbit. A 128 x 128 image matrix was used, acquiring data in 3° steps, for 15 s/step, through 360°. Data were reconstructed using a Metz 5-14 filter to provide tomographic images in the transaxial (parallel to the orbitomeatal line), coronal and sagittal planes. Each image set was normalised to the mean cerebellar counts.

Pre-treatment SPECT revealed multiple perfusion defects, including the frontal cortex bilaterally, but also the temporal cortex bilaterally, occipital cortex bilaterally, left parietal cortex, left caudate and both sides of the thalamus (more pronounced on the left).

The patient was then treated with citalopram 20 mg daily. She showed a gradual improvement in mood and anxiety after beginning medication. Concomitantly, she noted a decreased need for tension relief by pica, with significant improvement by week 8. The symptoms remained better throughout the subsequent course of treatment, although there was exacerbation at times of increased stress.

After 12 weeks of pharmacotherapy, the patient consented to repeat SPECT. She was given the same instructions as on the pre-medication SPECT, and again complied with these. SPECT data acquisition and processing were performed in the same way as in the pre-treatment study. Post-treatment SPECT revealed improvement in frontal cortical perfusion, as well as in most other previously abnormal areas. The perfusion defect in the right occipital area remained unchanged.



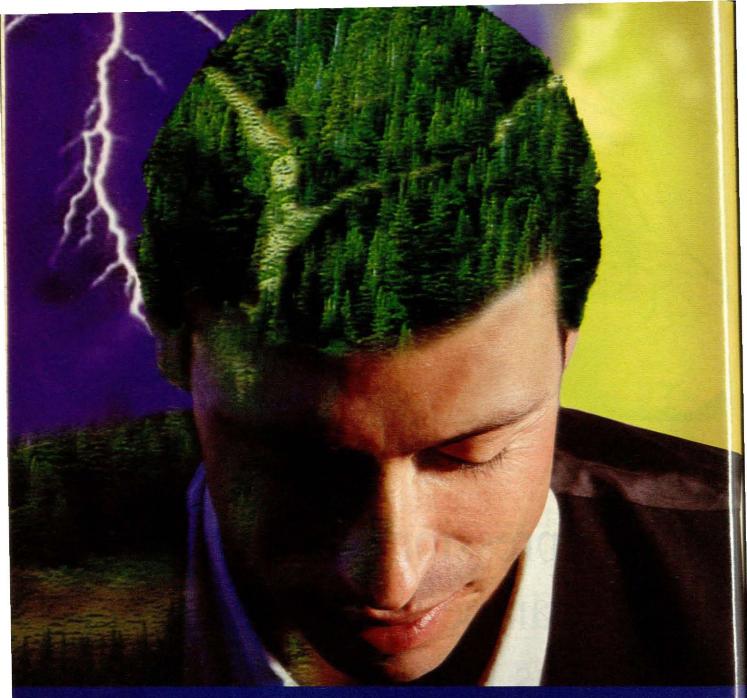
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Results

In 2 of the 5 cases presented here, pica appeared to be a symptom of OCD. These patients had classic OCD symptoms which met DSM-IV diagnostic criteria for OCD, and they described their pica as subjectively similar to such symptoms. There was no evidence to suggest that the pica was the result of iron-deficiency anaemia. Finally, classic symptoms of OCD and pica responded simultaneously to treatment with an SRI, and the gradual time course of this response was similar to that typically seen in OCD. In a third patient with OCD, the patient denied that the pica itself was an OCD symptom (although it followed certain rules), and the OCD and the pica responded differentially to an SRI.

In the remaining 2 patients, pica was more closely described by the diagnostic criteria for the DSM-IV category of Impulse Control Disorders Not Otherwise Classified. These patients thus described increasing tension prior to the pica and relief of tension and gratification after the pica, with 1 patient comparing pica to hair-pulling symptoms. In addition, 1 patient had decreased levels of CSF 5-HIAA, while in a second, functional brain imaging revealed hypoactivity in the frontal cortex, left basal ganglia and other areas, which was normalised by pharmacotherapy. Response to an SRI was relatively rapid, and in 1 case the symptom continued to wax and wane in response to external stressors.

Discussion

The main findings of this small series of cases are: (i) that pica may be a symptom of OCD and may respond gradually, together with classic OCD symptoms, to treatment with an SRI; and (ii) that pica may be phenomenologically reminiscent of an impulse control disorder, and that in such cases pharmacotherapeutic data (relatively rapid response to an SRI) may be consistent with that seen in impulse disorders.20 Although limited neurobiological data were available, these (decreased CSF serotonin metabolite concentration, frontal hypo-activity) were also consistent with that seen in impulse control disorders.20

A phenomenological and neurobiological contrast between compulsive and impulsive disorders has been considered in some detail elsewhere.721 An overly simplistic schema contrasts the phenomenology of compulsive disorders (increased harm-avoidance) and impulsive disorders (increased risk-seeking), as well as the neurobiology of compulsive disorders (serotonergic hypersensitivity, frontal hyperactivity) and impulsive disorders (serotonergic hyposensitivity, frontal hypo-activity). Similarly, while both compulsive and impulsive disorders may respond to treatment with SRIs, optimal dosage and typical response time may differ.

Such a schema provides one way of conceptualising the findings of this paper. Particular cases of pica may lie at either the compulsive or the impulsive end of the compulsive-impulsive spectrum of disorders. Such an hypothesis may be useful in guiding clinical interventions suggesting, for example, that high-dose SRIs may be useful in the treatment of patients with OCD and compulsive pica, but that more caution may be necessary in

pharmacotherapy for patients with impulsive pica. It may also provide a useful heuristic for guiding further research on pica, suggesting, for example, that further studies of pica need to examine phenomenology, neurobiology and treatment response more closely in relation to OCD and OCD spectrum disorders.

Our finding that pica may occur in association with classic symptoms of OCD has not previously been emphasised in the psychiatric literature. However, a historical review indicates that in many cases of pica, a crucial clinical variable is impulse dyscontrol, whether secondary to underlying neuropsychiatric impairment 13-16 or secondary to an impulsive personality structure. 16,18 For example, pica may be seen in mental retardation,14 where there is diminished impulse control. Similarly, in the 19th century, pica was seen as a symptom of a general condition known as chlorosis,16 in which there was a range of symptoms consistent with a pathological or impulsive personality structure.

Szabo et al.19 suggest a link between iron deficiency and the neurobiology of OCD. The relationship between iron deficiency and pica may not, however, be a simple or direct one.16.17 However, it is notable that iron deficiency has been found in some cases of trichotillomania.22 Nevertheless, data supporting a relationship between iron levels and function of the neurotransmitters known to mediate OCD are currently scanty. Further work to delineate the neurobiology of both compulsive and impulsive pica is clearly necessary.

The concept of a spectrum of OCD disorders has been criticised for being at times overly inclusive and insufficiently specific.23 Indeed, the view of pica taken here may apply to only a subgroup of patients, and even then the approach may be only partly valid. The OCD spectrum concept is best understood as having heuristic value in both clinical and research settings, rather than as an ultimate delineation of the relationships between different psychiatric disorders. In the case of pica, the notion of a compulsive-impulsive spectrum does seem to provide a useful framework for the case material presented here, and will hopefully encourage further investigation of this interesting symptom.

Dr Stein is supported by a grant from the Medical Research Council of South Africa and by the Lundbeck Fellowship Award.

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Accepted 26 June 1996.

Obsessive-compulsive disorder in black South Africans — a case series

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Background. Obsessive-compulsive disorder (OCD) has been shown to be highly prevalent in both developing and developed countries. Nevertheless, data on OCD in blacks, and black South Africans in particular, are limited.

Method. Records of patients presenting with OCD at a tertiary hospital serving a predominantly black population were reviewed. Patient data, including demographic information, presenting symptoms and clinical course, were collated.

Results. Six black South Africans had presented with OCD in the previous year. Phenomenology and psychopharmacology of the disorder were largely reminiscent of those previously reported in the international literature.

Conclusion. Not surprisingly, black South Africans may suffer from OCD. Nevertheless, it is likely that such patients do not present for treatment or are underdiagnosed. Future rigorous epidemiological research on OCD in South Africa is necessary.

S Afr Med J 1996: 86: 1592-1598.

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Although obsessive-compulsive disorder (OCD) has been shown to be extremely common, with a lifetime prevalence of 2 - 3% in both developed and developing countries,12 data on OCD in Africa are extremely sparse. A number of reviews of psychiatric disorders in Africa make no mention of OCD,34 while others have suggested that the incidence of obsessive-compulsive symptoms in blacks is low.56

In individual studies documenting diagnoses of psychiatric disorders in African settings, anxiety and neurotic disorders have unfortunately often either been classified together7-16 or have not included OCD as an anxiety disorder. 17,18 A number of studies have, however, found that OCD in black (particularly from sub-Saharan Africa) psychiatric patients 19-26 is low (Table I). Nevertheless, many of these studies suffer from significant methodological problems, such as failure to use structured clinical interviews.

Table I: Prevalence of OCD in African studies

| Authors | Diagnosis | Country | No. | OCD (%) |
|------------------------------------|--|---------|-------|------------|
| Lambo ¹⁹ | Clinical obsessive- compulsive neurosis | Nigeria | 7 946 | 0.004 |
| Leighton et al.20 | Clinical obsessive- compulsive neurosis | Nigeria | | 0.0 |
| Elsarrag ²¹ | Clinical obsessive- compulsive neurosis | Sudan | 2 160 | 0.5 |
| Okasha ²² | Clinical obsessive- compulsive disorder | Egypt | 1 000 | 2.6 |
| German and Arya ²³ | Clinical obsessive- compulsive neurosis | Uganda | 121 | 0.0 |
| Orley and Wing ²⁴ | Present state examination obsessions | Uganda | 206 | 2.4 |
| Gureje et al.25 | Clinical obsessional neurosis | Nigeria | 1 914 | 0.1 |
| Bertschy and Ahyi ²⁶ | Clinical obsessive- compulsive disorder | Benin | 351 | 1.4 |

There is no mention of OCD in South Africa in a number of general reviews of the South African psychiatric literature. 27,28 South African psychiatrists have, however, taken part in multinational clinical trials of OCD, which suggests that OCD patients are seen and treated here.29 Nevertheless, we are unaware of any reports on black South Africans with OCD. In this paper, we therefore provide retrospective clinical data on a series of black South African patients treated for symptoms of this disorder.

Methods

Records of 6 patients who had presented to a large tertiary hospital with OCD during the last year were reviewed. The hospital serves a predominantly black population, and all patients were black South Africans. All patients met diagnostic criteria for OCD, as outlined in the current Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).30

Patient data, including demographic information, presenting symptoms and course, were collated and tabulated (Table II).