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Clinical features of muscle dysmorphia among males with body dysmorphic disorder

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Abstract

Muscle dysmorphia – a pathological preoccupation with muscularity – appears to be a form of body dysmorphic disorder (BDD) with a focus on muscularity. However, little is known about muscle dysmorphia in men with BDD, and no study has compared men with BDD who do and do not report muscle dysmorphia. To explore this issue, we reviewed the histories of 63 men with BDD; we compared those rated as having a history of muscle dysmorphia with those who had BDD but not muscle dysmorphia in several domains. The 14 men with muscle dysmorphia resembled the 49 comparison men in demographic features, BDD severity, delusionality, and number of non-muscle-related body parts of concern. However, those with muscle dysmorphia were more likely to have attempted suicide, had poorer quality of life, and had a higher frequency of any substance use disorder and anabolic steroid abuse. Thus, muscle dysmorphia was associated with greater psychopathology.

Keywords

Muscle dysmorphia; Body dysmorphic disorder; Body image; Males; Anabolic steroids

Introduction

Muscle dysmorphia, a preoccupation with the idea that one's body is insufficiently lean or muscular, appears to be a relatively new form of body image disturbance in men that has received little investigation (Pope, Gruber, Choi, Olivardia, & Phillips, 1997; Pope, Phillips, & Olivardia, 2000). Men with muscle dysmorphia believe that they look "puny," or "small," when in reality they look normal or may even be unusually muscular. As a result, they may neglect important social or occupational activities because of shame over their perceived appearance flaws or their need to attend to a meticulous diet and time-consuming workout schedule. Some damage their health by excessively working out (Phillips, O'Sullivan, & Pope, 1997), and others report use of anabolic-androgenic steroids in an attempt to get bigger (Kanayama, Barry, Hudson, & Pope, in press; Pope et al., 2000).

Men in the bodybuilding world have long recognized this syndrome, and even coined the word "bigorexia" to describe it—recognizing that it is in many ways a "reverse" form of anorexia nervosa (Quinion, 2005). Indeed, the first scientific report of the syndrome, to our knowledge, termed it "reverse anorexia nervosa" (Pope, Katz, & Hudson, 1993). Subsequently, Pope et al. (1997) described additional cases and proposed to rename the syndrome "muscle dysmorphia."

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This paper also suggested operational diagnostic criteria for diagnosing the disorder, and hypothesized that muscle dysmorphia was likely a form of body dysmorphic disorder (BDD) in which the focus is on muscularity, as opposed to some other aspect of body appearance, such as hair, skin, or facial features. (In DSM-IV, BDD is defined as a preoccupation with an imagined or slight defect in appearance that causes clinically significant distress or impairment in functioning, and is not better accounted for by another disorder, such as anorexia nervosa.) Since the time of that report, a growing literature of popular (Pope et al., 2000; Smith, 1997) and scientific (Cafri et al., 2005; Chung, 2001; Hitzeroth, Wessels, Zungu-Dirwayi, Oosthuizen, & Stein, 2001; Olivardia, Pope, & Hudson, 2000) publications has examined features of men with muscle dysmorphia.

However, the relationship of muscle dysmorphia to other forms of BDD remains understudied. One recent study noted that 5 of 15 bodybuilders with muscle dysmorphia also displayed other, more classic BDD symptoms (Hitzeroth et al., 2001). This finding suggested that in some individuals, preoccupation with muscularity may be one of several concurrent body-image preoccupations. Another study (Olivardia et al., 2000) found marked comorbidity of muscle dysmorphia with other psychiatric disorders, but did not ask participants about other BDD symptoms—leaving it unclear whether muscle dysmorphia frequently co-occurs with other forms of BDD. To our knowledge, the only previous report (Pope et al., 1997) that has examined the converse topic – muscle dysmorphia in men with BDD – found that 9.3% of 193 subjects with BDD also had apparent muscle dysmorphia. However, this observation was included in a clinical overview of muscle dysmorphia, and no details about this finding were presented. Of particular relevance to the present report, similarities and differences between men with BDD who did and did not have co-occurring muscle dysmorphia were not examined.

The aim of the present study was to compare characteristics of men with BDD who also had muscle dysmorphia to those of men with BDD but not muscle dysmorphia. To our knowledge, this topic has not previously been examined. We hypothesized that men who also had muscle dysmorphia would have higher rates of eating disorders and anabolic-androgenic steroid abuse or dependence. Comparisons of demographic characteristics, social and occupational impairment, and measures of psychopathology were made, but differences were not expected.

Method

Participants

Participants were 63 men who constituted all of the male subjects from a sample of 200 individuals, all meeting DSM-IV criteria for lifetime BDD, who were participating in a study of BDD's course. All data in this report are from this study's intake interview. Of the 63 men, 52 (82.5%) currently met full DSM-IV criteria for BDD, 10 (15.9%) were currently in partial remission from BDD, and 1 (1.6%) was in full remission. All participants were required to be 12 years or older and available for an in-person interview. The only exclusion criterion was the presence of an organic mental disorder. Participants were recruited from mental health professionals (46%), advertisements (38%), our program website and brochures (10%), subject friends and relatives (3%), and nonpsychiatrist physicians (2%). The study was approved by the hospital Institutional Review Board, and all participants signed statements of informed consent (assent plus parental consent for adolescents).

Procedures

Data from the intake interview were reviewed by one of the investigators (CGP), who extracted all information from the interview that might possibly be relevant to the diagnosis of muscle dysmorphia. This information was then presented to HGP, who was blinded to all other information (aside from knowing that all cases had some form of BDD). HGP reviewed all 63

cases and assigned a diagnosis of muscle dysmorphia to those men who appeared to meet proposed diagnostic criteria (Pope et al., 1997) (i.e., the BDD criteria noted above as applied to muscularity preoccupations). In six to eight cases, interview information was insufficiently detailed to allow diagnostic certainty; the rater made a forced-choice decision in these instances. A second independent blinded rater (RO) was then later provided with the same abstracted information on each subject, and assigned diagnoses of muscle dysmorphia by the same criteria described above.

Measures

Participants were interviewed with measures previously described in more detail elsewhere (Phillips, Menard, Fay, & Weisberg, 2005). Features of BDD (including body areas of concern, excessive BDD-related behaviors, such as excessive weightlifting [operationalized as more than 1 h a day]), and lifetime functional impairment due to BDD) were obtained from the *BDD Form* (this unpublished scale is available from the last author upon request). This semi-structured measure has been used in previous BDD studies (e.g., Phillips, McElroy, Keck, Pope, & Hudson, 1993). Severity of lifetime BDD was determined with a question from the BDD Form that assessed the greatest social and academic/occupational/role interference ever experienced due to BDD on a scale ranging from none (score of 0) to extreme/incapacitating (score of 8). The rater-administered *Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder* (BDD-YBOCS) assessed current BDD severity; scores range from 0 (none) to 48 (most severe) (Phillips et al., 1997). The *Brown Assessment of Beliefs Scale* (BABS), a rater-administered measure, assessed the degree to which body-image beliefs were delusional; scores range from 0 to 24, with higher scores reflecting greater delusionality (Eisen et al., 1998).

Self-ratings of current quality of life were assessed by the Short Form of the *Quality of Life Enjoyment and Satisfaction Questionnaire* (Q-LES-Q), which assesses satisfaction and functioning in the domains of social, leisure, household, work, emotional well-being, physical, and school. Lower scores indicate poorer quality of life (Endicott, Nee, Harrison, & Blumenthal, 1993). (The Q-LES-Q was added later in the study; thus $n = 48$.) The Medical Outcomes Study 36-Item Short Form Health Survey (SF-36) (Ware, 1993) assessed mental health-related quality of life and mental health status; subscale scores range from 0 to 100, with lower scores reflecting poorer quality of life. The *Structured Clinical Interview for DSM-IV—Non-Patient Version* (*SCID-I*/*NP*) was used to diagnose BDD and other psychiatric disorders (First, Spitzer, Gibbon, & Williams, 2001). Studies indicate that the SCID, BDD-YBOCS, BABS, Q-LES-Q, and SF-36 generate scores with acceptable reliability and validity.

Statistical analysis

We compared the men with and without muscle dysmorphia on demographic variables. The groups were very closely matched on these indices, suggesting that multivariate analyses with adjustment for demographic differences were unnecessary. Accordingly, we compared the groups using *t*-tests for continuous variables and Fisher's exact test for categorical variables. Alpha was set at $p = 0.05$, two-tailed. Regarding the power of these comparisons, if one assumes that approximately 25% of the 63 men had muscle dysmorphia (as was found by both raters; see below) then there would be approximately an 80% chance of detecting a difference of 0.8 standard deviations between the two groups on a continuous variable. Because the study was exploratory, we did not adjust the alpha level for multiple comparisons. Therefore some findings, especially those close to $p = 0.05$, may represent chance associations. Effect size estimates were determined with Cohen's *d*, and the phi-coefficient. Our primary analyses are based on diagnoses assigned by HGP; we subsequently repeated the analyses using the diagnoses made by the second independent blinded rater.

Results

Using blinded ratings by the first rater, 14 (22.2%) of the 63 men were rated as having muscle dysmorphia. These men did not significantly differ from the 49 men without muscle dysmorphia on demographic indices (Table 1). BDD severity scores and delusionality (BABS score) also did not differ significantly between the groups.

Of the 14 men with muscle dysmorphia, 12 (86%) had additional non-muscle-related BDD. Of these 12 men, 9 had current muscle dysmorphia and current non-muscle-related BDD, 2 had past muscle dysmorphia and current non-muscle BDD, and 1 had past muscle dysmorphia and past non-muscle BDD. Men with muscle dysmorphia reported significantly more body areas of concern than comparison men. However, when comparing only non-muscle-related body parts (i.e., excluding concern with the chest, calves, stomach, arms, or any other body part that the subject indicated was “too small” or “not muscular enough”) the two groups were similar (Table 1). Among the men with muscle dysmorphia, the most common area of concern, as expected, was muscularity, followed by hair ($n = 9$) and skin ($n = 8$). Hair and skin were the most common concerns for the comparison men. As would be expected, men with muscle dysmorphia were more likely than comparison men to lift weights excessively (10 [71%] versus 6 [12%]; $p < 0.001$), exercise excessively (9 [64%] versus 5 [10%]; $p < 0.001$), and diet (10 [71%] versus 13 [27%]; $p = 0.009$). However, other BDD-related behaviors were similar: comparing, mirror checking, and camouflaging were the most common behaviors in both groups.

Men with muscle dysmorphia had poorer scores than comparison men on all quality-of-life measures, with two of four measures (the Q-LES-Q and SF-36 Mental Health subscale) reaching statistical significance, with large effect sizes. Men with muscle dysmorphia were also significantly more likely to report a suicide attempt. As hypothesized, men with muscle dysmorphia were significantly more likely to have abused anabolic-androgenic steroids—but unexpectedly, we found that they also exhibited a significantly higher lifetime prevalence of substance use disorders. Also as predicted, a higher proportion of men with muscle dysmorphia had a lifetime eating disorder (small–medium effect size), but the between-group difference was not statistically significant.

The second, independent blinded rater diagnosed muscle dysmorphia in 18 (28.6%) of the 63 men—representing the same 14 men diagnosed as having muscle dysmorphia by the first rater, plus 4 additional cases. Thus, the raters exhibited 93.6% agreement, with kappa = 0.83. We repeated the comparisons in Table 1 using the second rater’s muscle dysmorphia diagnoses, which produced very similar results (all findings significant at the $p < 0.05$ level remained significant at this level in the second analysis, and all nonsignificant findings remained nonsignificant).

Discussion

We found that males with BDD plus muscle dysmorphia were similar to those with BDD but not muscle dysmorphia on many variables, including BDD severity and delusionality, preoccupation with non-muscle-related body parts, and non-muscle dysmorphia-related BDD behaviors. However, the men with muscle dysmorphia were more likely to engage in several compulsive behaviors, and exhibited significantly greater psychopathology in terms of quality of life, suicide attempts, and prevalence of substance use disorders and anabolic-androgenic steroid use. A remarkably high proportion (50% in our primary analysis using ratings of the first rater) had attempted suicide, and their Q-LES-Q and SF-36 scores were strikingly poorer (1.7–2.6 standard deviation units lower) than general population or community norms (Endicott, personal communication; Ware, 1993).

It is unclear why men with muscle dysmorphia were more impaired. We would hypothesize that preoccupation with additional body areas, combined with additional time-consuming compulsive behaviors (excessive weightlifting, exercising, and dieting), amplifies the distress and impairment typically experienced by individuals with BDD. In a sense, our findings are consistent with studies of other disorders, which have found that greater axis I comorbidity is associated with poorer functioning (Welkowitz, Struening, Pittman, Guardino, & Welkowitz, 2000) and increased suicide attempts (Lecrubier, 2001). Although muscle dysmorphia is considered a form of BDD, rather than a comorbid disorder, the effect of additional symptoms may be similar.

Of note, several men with muscle dysmorphia reported anabolic-androgenic steroid use to increase muscle mass. This finding may be an underestimate, given that anabolic-androgenic steroid use is often denied (Pope, Kanayama, Ionescu-Pioggia, & Hudson, 2004). Given the medical and psychiatric risks associated with anabolic-androgenic steroid use (Brower, 2002; Pope et al., 2000), this behavior represents a serious clinical concern. The men with muscle dysmorphia also had a remarkably high rate of substance use disorders more generally —a finding that recalls another recent study showing that anabolic-androgenic steroid users exhibited remarkably high rates of other substance abuse and dependence (Kanayama, Pope, Cohane, & Hudson, 2003).

One study limitation is the small sample size, which limited statistical power. Also, the sample was one of convenience, and participants may not have been entirely representative of those in the community or the subgroup that consults clinicians. In addition, information in some records was insufficient for raters to diagnose muscle dysmorphia with certainty; however, there was a high rate of agreement between the two independent blinded raters, and two separate analyses, using the diagnoses of the two raters, produced very similar results. Furthermore, we did not compare a group of men with “pure” muscle dysmorphia (i.e., men with muscle dysmorphia but not other forms of BDD) to men with BDD but not muscle dysmorphia. (We found that several participants in our study had “pure” muscle dysmorphia, and this was the case for 10 of 15 participants in the study by Hitzeroth et al. (2001).) Such studies are needed to shed additional light on similarities and differences between muscle dysmorphia and more classic BDD symptoms, including whether muscle dysmorphia may be a more severe variant of BDD.

These findings have several clinical implications. First, when evaluating men presenting with any type of BDD, clinicians should inquire about muscle dysmorphia, since men with other body-part preoccupations may also have muscle dysmorphia, which appears to be associated with greater psychopathology. Second, if our findings are valid, and muscle dysmorphia not infrequently co-occurs with other manifestations of BDD, then it might be expected to respond to treatment similarly to classic BDD (i.e., serotonin uptake inhibitors [Phillips, 2002] or cognitive-behavioral therapy [Rosen, Reiter, & Orosan, 1995]). However, the treatment of muscle dysmorphia symptoms needs to be studied, as do many other aspects of this recently recognized and understudied condition.

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Table 1

Demographic and clinical characteristics of muscle dysmorphic versus non-muscle dysmorphic BDD participants

Variable[a]	Muscle dysmorphia (*n* = 14)	Non-muscle dysmorphia (*n* = 49)	Test statistic	*p*-Value	Effect size[b]
Demographics					
Age	36.0 ± 11.7	34.6 ± 9.6	*t* = 0.41	0.68	*d* = 0.13
Race (% white)	14 (100.0)	43 (87.8)	—[c]	0.32	Φ = 0.17
Single	12 (85.7)	41 (83.7)	—	1.00	Φ = 0.02
At least some college	12 (85.7)	32 (65.3)	—	0.20	Φ = 0.19
BDD symptoms					
Number of body areas of concern	7.6 ± 4.7	4.8 ± 3.3	*t* = −2.60	0.01	*d* = 0.76
Number of non-muscle-related body areas of concern	5.2 ± 4.1	4.8 ± 3.3	*t* = −0.40	0.69	*d* = 0.15
BDD severity					
Current BDD-YBOCS score,[de]	27.3 ± 10.1	24.7 ± 11.9	*t* = −0.7	0.46	*d* = 0.23
Lifetime social and occupational impairment due to BDD	6.9 ± 1.7	6.4 ± 1.5	*t* = −0.95	0.35	*d* = 0.27
BDD delusionality (BABS total score)[d]	15.3 ± 6.6	14.4 ± 7.3	*t* = −0.39	0.70	*d* = 0.13
Functional impairment due to BDD					
Housebound for more than 1 week	5 (35.7)	12 (24.5)	—	0.50	Φ = 0.50
Number of days missed from work and school	185.6 ± 299.2	113.0 ± 195.8	*t* = −1.08	0.29	*d* = 0.33
Quality of life[d]					
Q-LES-Q[f]	42.1 ± 20.6	56.8 ± 18.3	*t* = 2.12	0.04	*d* = 0.76
SF-36 mental health	27.3 ± 21.5	47.9 ± 23.2	*t* = 2.78	0.01	*d* = 0.85
SF-36 role emotional	25.0 ± 37.9	37.0 ± 42.9	*t* = 0.88	0.38	*d* = 0.28
SF-36 social functioning	36.5 ± 21.0	50.5 ± 28.1	*t* = 1.62	0.11	*d* = 0.52
Attempted suicide (lifetime)	7 (50.0)	8 (16.3)	—	0.02	Φ = 0.33
Lifetime substance use disorders					
Any substance use disorder[g]	12 (85.7)	25 (51.0)	—	0.03	Φ = 0.29
Non-alcoholic substance use disorders[h]	11 (78.6)	15 (30.6)	—	0.001	Φ = 0.41
Steroid abuse/dependence	3 (21.4)	0	—	0.009	Φ = 0.42
Lifetime psychiatric disorders					
Mood disorders	12 (85.7)	40 (81.6)	—	1.00	Φ = 0.05
Anxiety disorders	11 (78.6)	32 (65.3)	—	0.52	Φ = 0.12
Eating disorders	3 (21.4)	4 (8.2)	—	0.18	Φ = 0.18

[a] Results are presented as *n* (%) of subjects or mean ± standard deviation. *df* = 61 for all *t*-tests except for the Q-LES-Q (*df* = 46) and the three SF-36 subscales (*df* = 56).

[b] For effect sizes, *d* = 0.2 is small, 0.5 is medium, and 0.8 is large; Φ of 0.1 is small, 0.3 is medium, and 0.5 is large.

[c] Dashes indicate Fisher's exact test.

[d] Results are presented for the entire sample, not just subjects currently meeting full DSM-IV criteria for BDD.

[e] BDD severity for the entire sample (not just subjects currently meeting full DSM-IV criteria for BDD) is in the moderate range.

[f] Q-LES-Q results reflect the total converted score.

[g] Includes those subjects with lifetime steroid abuse/dependence (*n* = 3). However, all three of these subjects also had a diagnosis of a non-steroid lifetime substance use disorder.

[h] One of the subjects with muscle dysmorphia had steroid dependence but did not have abuse/dependence on any other non-alcoholic substance. Results remain significant when excluding this one individual from the analysis ($p < 0.01$, Φ = 0.38).