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**Literature search results**

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**Search details**

Association of depression with acromegaly. What is the pathophysiology - does acromegaly cause depression or vice-versa?

**Resources searched**

NHS Evidence; TRIP Database; Cochrane Library; CINAHL EMBASE; MEDLINE; PsychINFO; Google Scholar

**Database search terms:** acromegaly*; ACROMEGALY; hypersomatotropism; somatotropin adj1 hypersecretion adj1 syndrome*; “inappropriate growth hormone secretion syndrome*”; “marie’s disease”; depress*; DEPRESSION; melanchol*; exp DEPRESSIVE DISORDER; dysthyemic adj1 disorder*; pathophysiolog*

**Evidence search string(s):** (acromegal* OR hypersomatotropism OR somatotropin OR (“pituitary gland” (disease* OR disorder*)) OR hyperpituitarism) (depression OR bipolar) pathophysiol*

**Google search string(s):** ~acromegaly ~depression ~pathophysiology

**Summary**

There is some research into acromegaly depression, and if not on the condition specifically then on pituitary gland disorders and their effect on patients’ neurological and psychological state. The research seems to suggest that there may be a link, but this may be due to endocrine disorders generally rather than to acromegaly specifically. In some papers there does appear to be a direct link.
Guidelines

American Association of Clinical Endocrinologists

Medical guidelines for clinical practice for the diagnosis and treatment of acromegaly 2011

Acromegaly appears to be associated with psychologic changes and alterations in personality, attributable to impairment in self-esteem, distortion of body image, disruption in interpersonal relationships, social withdrawal, and anxiety (67 [EL 3]). Patients often have depression, which may inhibit recovery (68 [EL 4]).

Evidence-based reviews

Cochrane Central Register of Controlled Trials

Evidence of cognitive and neurophysiological impairment in patients with untreated naive acromegaly 2010

Results provide evidence of cognitive and neurophysiological impairment, characterized by moderate-to-severe memory impairment and decreased neural activity in specific brain areas. High levels of GH and IGF-I in acromegaly patients could be the basis for these findings.

Published research


Author(s) Sievers C, Samann PG, Pfister H, Dimopoulou C, Czisch M, Roemmler J, Schopohl J, Stalla GK, Zihl J

Citation: Pituitary, September 2012, vol./is. 15/3(350-7), 1386-341X;1573-7403 (2012 Sep)

Publication Date: September 2012

Abstract: In acromegaly, we reported on increased rates of affective disorders such as dysthymia and depression, as well as structural brain changes. Objective of this study was to determine if cognitive impairments in patients with acromegaly exist and whether such impairments are associated with structural brain alterations defined by magnetic resonance imaging (MRI). In this cross-sectional study, 55 patients with biochemically confirmed acromegaly were enrolled. MRI data were compared with 87 control subjects. Main outcome measures were performance levels in 13 cognitive tests covering the domains of attention, memory and executive function, with performance below the cut-off level of the 16th percentile rated as impaired. In addition, individual global and hippocampal volume changes were defined for each patient in reference to a normative sample. We found that up to 33.3% of the patients were impaired in the attention, up to 24.1% in the memory, and up to 16.7% in the executive function domain. 67.3% of the patients failed to reach the cut-off level in at least one subtest. MRI demonstrated increased global, left and right hippocampal grey matter and white matter, particularly early in the disease course. Rather few positive than expected negative correlations could be established between the hippocampal grey matter gain and cognitive performance. Cognitive dysfunction, particularly attentional deficits, are common in acromegaly, rendering neuropsychological testing essential in the diagnostic work-up.

Source: Medline

Available in print at

2. Severe psychopathology: An unusual manifestation of carcinoid disease-Case reports

Author(s) Philip T., Jacoby S.H., Nissel-Horowitz S., Russ M., Mehrotra B.

Citation: Journal of Clinical Oncology, May 2011, vol./is. 29/15 SUPPL. 1, 0732-183X (20
Abstract: Background: Carcinoid tumors are known to secrete neurohumoral substances resulting in the manifestation of carcinoid syndrome. There are only rare reports of severe psychiatric symptoms associated with carcinoid disease. We report our institutional experience of two pts with advanced carcinoid disease who developed significant psychiatric symptoms during their disease course. Methods: A retrospective chart review was performed of two cases that met the criteria for carcinoid disease and serious psychopathology. Results: Case 1 was a 57 year old man who was found to have carcinoid tumors six years prior during an exp. laparotomy for an abdominal injury. At presentation to our institution, he was noted to have a history of psychiatric illness that had required hospitalization. Exam was notable for features of acromegaly. Liver biopsy confirmed metastatic carcinoid. His serum chromogranin (chr) levels varied between 2,300-65,000 ng/mL. He had spinal metastases and manifestations of carcinoid heart disease; and was treated with long acting octreotide and zoledronic acid. He required treatment for severe depression during the course of his disease. Progressive liver disease required hepatic embolization which caused a flare in chr levels to 158,000 ng/mL and coincided with the development of transient catatonia. Six months later he succumbed to cardiac and GI complications of carcinoid. Case 2 is a 47 year old man with a history of pituitary adenoma and acromegaly who was initially diagnosed with advanced small bowel carcinoid during an exp. laparotomy for symptoms of bowel obstruction. He was treated with doxorubicin, streptozocin and long acting octreotide. His serum chr levels ranged from 12-470 ng/mL. Seven years after initial diagnosis, he reported new onset suicidal ideation in the context of depression. He was placed on antidepressants and remains stable at this time. Conclusions: These two cases illustrate the rare association of serious psychiatric disorders and advanced carcinoid disease. We present these cases to increase awareness among treating oncologists who follow these patients with typically indolent disease. The pathophysiologic basis for this association remains to be elucidated.

Source: EMBASE

Available in fulltext from Journal of Clinical Oncology at the ULHT Library and Knowledge Services’ eJournal collection

3. Increased psychopathology and maladaptive personality traits, but normal cognitive functioning, in patients after long-term cure of acromegaly.

Author(s) Tiemensma J, Biermasz NR, van der Mast RC, Wassenaar MJ, Middelkoop HA, Pereira AM, Romijn JA

Citation: Journal of Clinical Endocrinology & Metabolism, December 2010, vol./Is. 95/12(E392-402), 0021-972X;1945-7197 (2010 Dec)

Publication Date: December 2010

Abstract: OBJECTIVE: Active acromegaly is associated with psychopathology, personality changes, and cognitive dysfunction. It is unknown whether, and to what extent, these effects are present after long-term cure of acromegaly.AIM: The aim of the study was to assess psychopathology, personality traits, and cognitive function in patients after long-term cure of acromegaly.DESIGN: This was a cross-sectional study.PATIENTS AND METHODS: We studied 68 patients after long-term cure (13+/-1 yr) of acromegaly and 68 matched controls. We compared these data with 60 patients treated for nonfunctioning pituitary macroadenomas (NFMA) and 60 matched controls. Psychopathology was assessed using the Apathy Scale, Irritability Scale, Hospital Anxiety and Depression Scale, and Mood and Anxiety Symptoms Questionnaire short-form, and personality was assessed by the Dimensional Assessment of Personality Pathology short-form (DAPPs). Cognitive function was assessed by 11 tests.RESULTS: Compared with matched controls, patients cured from acromegaly scored significantly worse on virtually all psychopathology questionnaires and on several subscales of the DAPPs. Compared with NFMA patients, patients cured from acromegaly scored worse on negative affect (P<0.050) and somatic arousal (P<0.009) and seven of 18 subscales of the DAPPs (P<0.05). Cognitive function in patients cured from acromegaly did not differ from matched controls or patients treated for NFMA.CONCLUSION: Patients with long-term cure of acromegaly show a higher prevalence of psychopathology and maladaptive personality traits but not cognitive
dysfunction, compared with matched controls and patients treated for NFMA. These results suggest irreversible effects of previous GH excess, rather than effects of pituitary adenomas per se and/or their treatment, on the central nervous system.

Source: Medline

Available in fulltext from Journal of Clinical Endocrinology and Metabolism at Highwire Press

4. Evidence of cognitive and neurophysiological impairment in patients with untreated naive acromegaly.

Author(s) Leon-Carrion J, Martin-Rodriguez JF, Madrazo-Atutxa A, Soto-Moreno A, Venegas-Moreno E, Torres-Vela E, Benito-Lopez P, Galvez MA, Tinahones FJ, Leal-Cerro A

Citation: Journal of Clinical Endocrinology & Metabolism, September 2010, vol./is. 95/9(4367-79), 0021-972X;1945-7197 (2010 Sep)

Publication Date: September 2010

Abstract: CONTEXT: Recent studies have suggested that long-term exposure to high levels of GH and IGF-I affect brain and cognitive functions. However, very few human studies have challenged this hypothesis.OBJECTIVE: The aim of this study is to explore whether GH/IGF-I excess in naive patients with acromegaly alters cognitive functions, particularly memory, and whether these alterations are accompanied by neurophysiological correlates.DESIGN: We conducted a comprehensive neuropsychological and neurophysiological exam on 16 naive acromegaly patients and 16 strictly matched healthy controls. Comparative analyses were carried out on major neurocognitive domains (executive functions, visual/verbal memory, attention, visuoconstructive abilities, and verbal fluency) and on quantitative electroencephalogram and low-resolution brain electromagnetic tomography sources. Results were correlated with GH and IGF-I hormone concentrations.RESULTS: Short- and long-term memory were the most severely impaired cognitive functions. Moreover, memory performance correlated negatively with GH and IGF-I concentrations. No association was detected between depression and memory impairment, and only a marginal association was found with quality of life. Finally, acromegaly patients showed power attenuation in fast frequency electroencephalogram bands, as well as decreased activity in prefrontal and middle temporal cortices, that was associated to cognitive performance.CONCLUSIONS: Results provide evidence of cognitive and neurophysiological impairment, characterized by moderate-to-severe memory impairment and decreased neural activity in specific brain areas. High levels of GH and IGF-I in acromegaly patients could be the basis for these findings.

Source: Medline

Available in fulltext from Journal of Clinical Endocrinology and Metabolism at Highwire Press

5. Clinical osteoarthritis predicts physical and psychological QoL in acromegaly patients.

Author(s) Wassenaar MJ, Biermasz NR, Kloppenburg M, van der Klaauw AA, Tiemensma J, Smit JW, Pereira AM, Roelfsema F, Kroon HM, Romijn JA

Citation: Growth Hormone & Igf Research, June 2010, vol./is. 20/3(226-33), 1096-6374;1532-2238 (2010 Jun)

Publication Date: June 2010

Abstract: OBJECTIVE: Quality of life is decreased in patients with long-term control of acromegaly. In addition, these patients suffer from irreversible osteoarthritis. The aim of this study was to assess the impact of joint-specific complaints, clinical and radiological signs of arthropathy on different aspects of quality of life (QoL) in patients with acromegaly after long-term disease control.DESIGN: Cross-sectional study.METHODS: We studied 58 patients (31 males), mean age 60 years (range 32-81 years), with strict biochemical control of acromegaly for a mean duration of 15 years. QoL was assessed by four health-related QoL questionnaires (HADS, MFI-20, NHP, SF-36) and one disease specific QoL
questionnaire (AcroQoL). The outcomes of these questionnaires were compared with joint-specific self-reported complaints of pain/stiffness, clinical osteoarthritis based on American College of Rheumatology (ACR) and radiological osteoarthritis based on the Kellgren-Lawrence (KL) scoring method. RESULTS: Long-term cured acromegaly patients had high pain scores of the spine, knee, and hip which limited physical functioning (mean difference -27.0, 95%-CI -9.5, -41.0) and psychological well-being (mean difference -44.4, 95%-CI -26.1, -60.9) (SF-36). Clinical osteoarthritis of the spine was associated mostly with impaired QoL scores, on physical, social, and emotional functioning, and on anxiety and depression. Remarkably, radiological osteoarthritis was not associated with impaired QoL. CONCLUSION: These findings accentuate the importance of recognition of the clinical manifestations of arthropathy in patients with acromegaly despite long-term disease control. Copyright 2010 Elsevier Ltd. All rights reserved.

Source: Medline
Available in print at

6. Growth hormone deficiency is associated with decreased quality of life in patients with prior acromegaly.


Citation: Journal of Clinical Endocrinology & Metabolism, July 2009, vol./is. 94/7(2471-7), 0021-972X;1945-7197 (2009 Jul)

Publication Date: July 2009

Abstract: CONTEXT: Both GH deficiency (GHD) and GH excess are associated with a decreased quality of life. However, it is unknown whether patients with GHD after treatment for acromegaly have a poorer quality of life than those with normal GH levels after cure of acromegaly. OBJECTIVE: The aim of the study was to determine whether patients with GHD and prior acromegaly have a poorer quality of life than those with GH sufficiency after cure of acromegaly. DESIGN AND SETTING: We conducted a cross-sectional study in a General Clinical Research Center. STUDY PARTICIPANTS: Forty-five patients with prior acromegaly participated: 26 with GHD and 19 with GH sufficiency. INTERVENTION: There were no interventions. MAIN OUTCOME MEASURES: We evaluated quality of life, as measured by 1) the Quality of Life Adult Growth Hormone Deficiency Assessment (QoL-AGHDA); 2) the Short-Form Health Survey (SF-36); and 3) the Symptom Questionnaire. RESULTS: Mean scores on all subscales of all questionnaires, except for the anger/hostility and anxiety subscales of the Symptom Questionnaire, showed significantly impaired quality of life in the GH-deficient group compared with the GH-sufficient group. Peak GH levels after GHRH-arginine stimulation levels were inversely associated with QoL-AGHDA scale scores (\(R = -0.53\); \(P = 0.0005\)) and the Symptom Questionnaire Depression subscale scores (\(R = -0.35\); \(P = 0.031\)) and positively associated with most SF-36 subscale scores. CONCLUSIONS: Our data are the first to demonstrate a reduced quality of life in patients who develop GHD after cure of acromegaly compared to those who are GH sufficient. Further studies are warranted to determine whether GH replacement would improve quality of life for patients with GHD after cure from acromegaly.

Source: Medline
Available in fulltext from Journal of Clinical Endocrinology and Metabolism at Highwire Press

7. Depression in acromegaly treated with escitalopram and cognitive therapy.

Author(s) De Sousa A

Citation: Indian Journal of Psychological Medicine, January 2009, vol./is. 31/1(50-1), 0253-7176;0253-7176 (2009 Jan)

Publication Date: January 2009

Abstract: Depression is one of the commonest disorders encountered in general hospital psychiatry. Acromegaly is a condition with excessive growth hormone secretion that may at times present with oversychopathology. We present the case of a 33-year-old lady with
depression and acromegaly that successfully resolved after treatment with escitalopram and cognitive therapy.

Source: Medline

8. Previous radiotherapy negatively influences quality of life during 4 years of follow-up in patients cured from acromegaly.

Author(s) van der Klaauw AA, Biermasz NR, Hoftijzer HC, Pereira AM, Romijn JA

Citation: Clinical Endocrinology, July 2008, vol./is. 69/1(123-8), 0300-0664;1365-2265 (2008 Jul)

Publication Date: July 2008

Abstract: OBJECTIVE: Cross-sectional studies have shown impaired quality of life (QoL) in patients in biochemical control of acromegaly. The aim of this study was to assess longitudinal changes in QoL in a homogenous cohort of patients with sustained biochemical control of acromegaly.

DESIGN: Prospective follow-up study.

PATIENTS AND METHODS: QoL was assessed using four health-related QoL questionnaires (HADS, Hospital Anxiety and Depression Scale; MFI-20, Multidimensional Fatigue Index; and SF-36, Short Form-36) and one disease-specific acromegaly quality of life (ACRO-QOL) questionnaire in 82 patients (43 men) with strict biochemical control of acromegaly, aged 56 years (range 29-84 years) at baseline and after 4 years of follow-up. The mean duration of controlled disease was 12 years (range 1-26 years).

RESULTS: During follow-up, scores in 5 of 26 QoL subscales significantly worsened: physical and social functioning (SF-36), physical fatigue (MFI-20), and psychological well-being and personal relations (ACRO-QOL). Using linear regression analysis, baseline item scores predicted the follow-up scores, indicating individual stability over time. Previous radiotherapy (n = 27, 33%) negatively influenced several QoL subscales at follow-up: energy, pain and social isolation (NHP), physical fatigue and reduction in activity and motivation (MFI-20), depression and total anxiety and depression scores (HADS) and physical performance (ACRO-QOL).

CONCLUSION: During 4 years of follow-up in patients with long-term biochemical control of ACRO-QOL is subtly, but progressively impaired. Radiotherapy was the predominant indicator of progressive impairment in QoL.

Source: Medline

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9. Octreotide-induced manic episodes in a patient with acromegaly

Author(s) Fernandez-Real J.M., Recasens M., Ricart W.

Citation: Annals of internal medicine, May 2006, vol./is. 144/9(704), 1539-3704 (2 May 2006)

Publication Date: May 2006

Source: EMBASE

Available in print at

Available in print at


Author(s) Biermasz NR, van Thiel SW, Pereira AM, Hoftijzer HC, van Hemert AM, Smit JW, Romijn JA, Roelfsema F

Citation: Journal of Clinical Endocrinology & Metabolism, November 2004, vol./is. 89/11(5369-76), 0021-972X;0021-972X (2004 Nov)
Abstract: The long-term impact of acromegaly on subjective well-being after treatment of GH excess is unclear. Therefore, we evaluated quality of life by validated questionnaires in a cross-sectional study of 118 successfully treated acromegalic patients. The initial treatment was transsphenoidal surgery in most patients (92%), if necessary followed by radiotherapy or octreotide. All patients were in remission at the time of assessment (GH, <1.9 mug/liter; normal IGF-I for age). General perceived well-being was reduced compared with controls for all subscales (P < 0.001) as measured by the Nottingham Health Profile and the Short Form-36. Acromegalic patients also had lower scores on fatigue (Multidimensional Fatigue Index) and anxiety and depression (Hospital Anxiety and Depression Scale). Radiotherapy was associated with decreased quality of life in all subscales except for the Hospital Anxiety and Depression Scale, and worsened quality of life significantly, according to the fatigue scores. Somatostatin analog treatment was not associated with improved quality of life. Independent predictors of quality of life were age (physical subscales and Nottingham Health Profile), disease duration (social isolation and personal relations), and radiotherapy (physical and fatigue subscales). In conclusion, patients cured after treatment for acromegaly have a persistently decreased quality of life despite long-term biochemical cure of GH excess. Radiotherapy especially is associated with a reduced quality of life.

Source: Medline
Available in fulltext from Journal of Clinical Endocrinology and Metabolism at Highwire Press

11. Persistent Psychological Distress in Patients Treated for Endocrine Disease
Author(s) Sonino N., Navarrini C., Ruini C., Ottolini F., Paoletta A., Fallo F., Boscaro M., Fava G.A.
Citation: Psychotherapy and Psychosomatics, 2004, vol./is. 73/2(78-83), 0033-3190 (2004)
Publication Date: 2004
Abstract: Background: The purpose of the study was to assess the frequency and characteristics of psychological distress, even after adequate treatment, in the heterogeneous population of an endocrine outpatient clinic. Methods: 146 endocrine patients (31 males/115 females; age 39.4 +/- 12.5 years), who were cured or in remission, were studied in a university endocrine outpatient clinic. Semistructured clinical interviews to assess psychiatric (Structured Clinical Interview for DSM-IV) and psychological (Diagnostic Criteria for Psychosomatic Research, DCPR) diagnoses were employed and were supplemented by self-rated instruments (the Psychosocial Index and the Medical Outcome Study short form General Health Survey) which could provide the patients' perception of their own quality of life. Results: There were 118 patients (81%) who presented with at least 1 psychiatric (DSM-IV) or psychological (DCPR) diagnosis. The most frequent diagnostic findings were generalized anxiety disorder (29%), major depression (26%), irritable mood (46%), demoralization (34%) and persistent somatization (21%). By self-rated instruments, patients with at least 1 DSM-IV or DCPR diagnosis reported significantly more stressful life circumstances, psychological distress and an impaired quality of life compared to those who had none. Conclusions: A high prevalence of psychological distress may be encountered in the long-term follow-up of endocrine patients. A biopsychosocial consideration of the person and his/her quality of life appears to be mandatory for improving therapeutic effectiveness in endocrine disorders. Copyright 2004 S. Karger AG, Basel.
Source: EMBASE
Available in print at

12. Psychopathology in Endocrine Disorders: Why so Persistent after the Cure?
Author(s) Sobrinho L.G.
Citation: Psychotherapy and Psychosomatics, 2004, vol./is. 73/2(65-67), 0033-3190
13. The reliability and validity of the impact on lifestyle questionnaire in patients with acromegaly.

Author(s) Lenderking WR, Zacker C, Katzenelson L, Vance ML, Hossain S, Tafesse E, Guacaneme AO, Pashos CL

Citation: Value in Health, July 2000, vol./is. 3/4(261-9), 1098-3015;1098-3015 (2000 Jul-Aug)

Publication Date: July 2000

Abstract: OBJECTIVES: Treatments for acromegaly, a growth hormone disorder, can be burdensome to patients, often requiring multiple self-administered injections daily. We developed the Impact on Lifestyle Questionnaire (ILQ) to measure the impact on patient's lifestyle imposed by the burden of injectable treatments for acromegaly. The primary objective of this study was to establish the reliability and validity of the ILQ.METHODS: The ILQ consists of the SF-12 and 30 additional questions. Thirty-four patients, from two sites, completed the ILQ and scales measuring related concepts. Fourteen patients also completed a retest survey 4 weeks later. Survey sample data were combined with ILQ data from another 56 patients with acromegaly for a factor analysis. Reliability was assessed with Cronbach's alpha and test-retest. Zero-order correlations were examined between ILQ subscales and symptoms, depression, SF-12 mental and physical components, a measure of self-care burden, appraisal of illness, and single-item measures of quality of life and satisfaction.RESULTS: The preconceived subscale structure was supported by factor analysis. These factors were internally consistent and stable over time. Good convergent validity was demonstrated between the Burden and Disruption scales with other measures of the burden of treatment. Patients indicated that they were generally compliant with therapy, and that treatment was not particularly burdensome or disruptive. Results based on the ILQ were consistent with other scales and qualitative responses.CONCLUSIONS: The ILQ has three subscales, Burden, Lifestyle Disruption, and Compliance, that are reliable and demonstrate preliminary evidence of construct validity.

Source: Medline

14. Emotional disorders in patients with different types of pituitary adenomas and factors affecting the diagnostic process.

Author(s) Flitsch J, Spitzner S, Ludecke DK

Citation: Experimental & Clinical Endocrinology & Diabetes, 2000, vol./is. 108/7(480-5), 0947-7349;0947-7349 (2000)

Publication Date: 2000

Abstract: A prospective study of 48 patients with pituitary adenomas, 19 adenomas causing Cushing's disease, 18 adenomas causing acromegaly, and 11 clinically hormone-inactive adenomas (inactive adenomas), was performed to study emotional disorders occurring before and after transsphenoidal microsurgery. Factors which led to an obvious delay in the diagnostic process were identified. - The tools utilised were an interview and repeated personality assessments. The personality assessments were begun preoperatively and continued for about half a year postoperatively. The interview data, including retrospective statements regarding somatic difficulties, was analysed. - The thesis of a uniform psychopathology due to the influence of elevated hormone levels, and a lack in patients' sensitivity towards their changed appearance in acromegaly could not be confirmed. A high variability of reported emotional problems was found. The most common psychopathological signs for Cushing's disease were excitability and depression, for acromegaly fatigue/loss of energy was the most frequent complaint. Six to eight months postoperatively, a majority of patients noticed an increase of physical well-being. In acromegaly, the time span between first consultation and diagnosis averaged 6.2 years, in
Cushing's disease it was 4.3 years, and in inactive adenomas it was 3.9 years. Only a small part of the delay in diagnosis, less than two years, could be attributed to the patients' hesitation to consult a physician.

**Source:** Medline
Available in *print* at

**15. The symptoms of depression in endocrine disorders**

**Author(s)** Hutto B.

**Citation:** CNS Spectrums, 1999, vol./is. 4/4(51-61), 1092-8529 (1999)

**Publication Date:** 1999

**Abstract:** Many endocrine disorders present with symptoms of depression, thus differentiating primary depressive disorders from such endocrine conditions can be challenging. Awareness of the typical clinical picture of endocrine disorders is of primary importance. This article discusses a variety of common and uncommon endocrine disorders and the symptomatology that might suggest a depressive illness, and reviews literature on how endocrinopathies can mimic depression. Emphasis is also placed on the role that stress can play in the pathogenesis of endocrine disorders. Psychiatrists should be familiar with the range of presenting symptoms for endocrine disorders, and they should not rely on the presence or absence of stressors to guide their differential diagnosis between depression and endocrine disorders.

**Source:** EMBASE
Available in *print* at

**16. Involvement of brain catecholamines and acetylcholine in growth hormone hypersecretory states. Pathophysiological, diagnostic and therapeutic implications.**

**Author(s)** Muller EE, Rolla M, Ghigo E, Belliti D, Arvat E, Andreoni A, Torsello A, Locatelli V, Camanni F

**Citation:** Drugs, November 1995, vol./is. 50/5(805-37), 0012-6667;0012-6667 (1995 Nov)

**Publication Date:** November 1995

**Abstract:** Secretion of growth hormone (GH) is excessive in acromegaly, but also in a number of other pathological states such as anorexia nervosa, insulin-dependent diabetes mellitus (IDDM), liver cirrhosis, depression, renal failure and GH-insensitivity syndrome. Abnormalities in the neuroendocrine control of GH secretion and/or a state of insensitivity to GH contribute to hypersecretion of GH in these states, with the possible exception of acromegaly, which appears to be a primary pituitary disease. GH hypersecretion may also occur in neonates or adolescents with tall stature, thus reflecting particular physiological or parapathological conditions. In the cohort of brain neurotransmitters, catecholamines and acetylcholine reportedly play a major role in the control of neurosecretory GH-releasing hormone (GHRH) and somatostatin (SS)-producing neurons, and hence GH secretion. Activation of alpha 2-adrenoceptors or of muscarinic cholinergic receptors in the hypothalamus stimulates GH release, probably through stimulation of GHRH and inhibition of SS release, respectively. Activation of dopamine receptors likewise stimulates GH release, while activation of beta-receptors inhibits GH release through stimulation of hypothalamic SS function. This review discusses the involvement of brain catecholamines and acetylcholine in GH hypersecretory states, including anorexia nervosa, acromegaly, IDDM, liver cirrhosis, depression, renal failure and GH insensitivity syndrome, with a view to providing a fuller understanding of their pathophysiology and, whenever possible, diagnostic and therapeutic implications.

**Source:** Medline
Available in *print* at

**17. Psychiatric aspects of acromegaly: A review and case report.**
18. Neuroendocrinology

Author(s) George S.R.

Citation: Current Opinion in Neurology and Neurosurgery, 1989, vol./is. 2/3(386-393), 0951-7383 (1989)

Publication Date: 1989

Source: EMBASE

19. Psychiatric morbidity in acromegaly.

Author(s) Abed, R. T, Clark, J, Elbadawy, M. H, Cliffe, M. J

Citation: Acta Psychiatrica Scandinavica, June 1987, vol./is. 75/6(635-639), 0001-690X,1600-0447 (Jun 1987)

Publication Date: June 1987

Abstract: Examined psychiatric morbidity in 29 female and 22 male acromegalics (i.e., suffering from hyperpituitarism) who completed the General Health Questionnaire; 23 of the females and 18 of the males also completed the Present State Examination. Although psychiatric morbidity was higher in females than males, there was no evidence of increased psychiatric morbidity or depression, and no relationship between growth hormone levels and psychiatric morbidity was found. It is suggested that morbidity in these patients is lower than previously reported and that depression in acromegalic patients may have been coincidental. (PsycINFO Database Record (c) 2012 APA, all rights reserved)

Source: PsycINFO

20. Acromegaly.

Author(s) Nabarro JD

Citation: Clinical Endocrinology, April 1987, vol./is. 26/4(481-512), 0300-0664;0300-0664 (1987 Apr)

Publication Date: April 1987

Abstract: A personal series of 256 cases of acromegaly/gigantism seen over a 20-year period from 1963 is described. The insidious nature of the condition resulted in delay in diagnosis which was often made by a doctor when seeing the patient for an unrelated problem. Other features which commonly led to the diagnosis being made were headache, change in appearance, carpal tunnel syndrome, amenorrhoea and diabetes. The Hardy system for grading the radiological appearance of the pituitary tumour was used. Widely invasive tumours were not common but tended to occur in patients with younger age of onset and high GH levels. The occurrence of various symptoms and clinical features was noted and the changes resulting from reducing the GH level to normal. The incidence of hypertension, but not of coronary artery disease, is increased and the blood pressure may be reduced following successful treatment. The effects on the upper and lower respiratory
tract are reported as well as sleep apnoea and problems associated with anaesthesia. Skin manifestations included sweating, pigmented skin tags, acanthosis nigricans and cutis verticis gyrata. In the skeletal system the incidence of kyphoscoliosis and osteoarthritis especially of the hip is reported: the question of hip replacement is discussed. Diabetes mellitus disappeared in most cases if the acromegaly was cured. In men but not in women the incidence of colloid nodular goitre was increased as was hyperthyroidism in middle-aged women. In two patients a parathyroid adenoma was present: hypercalcaemia was present in five additional patients, but the cause was not determined. The common occurrence of amenorrhoea in the younger women was noted, it was not always associated with hyperprolactinaemia, and often responded to successful treatment of the acromegaly. The association of acromegaly with hirsutism and galactorrhoea is confirmed. The incidence of impotence and loss of libido in the men is discussed: in a proportion of those in whom the acromegaly was cured, potency returned, but in a number depression occurred and what was believed to be psychogenic impotence persisted. Hyperprolactinaemia was found in 49 out of 151 patients with active acromegaly in whom the prolactin level was measured. Previous reports have indicated a doubling of death rates in acromegalics. In this series there were 47 deaths observed compared to 37.2 expected. The increased death rate was in women of all ages and in men under the age of 55. The increased deaths in the women were from cardiovascular and cerebrovascular causes and from breast cancer.

Source: Medline
Available in print at


Author(s) Fava GA, Sonino N, Morphy MA

Citation: Psychiatric Developments, 1987, vol./is. 5/4(321-48), 0262-9283;0262-9283 (1987)

Publication Date: 1987

Abstract: The discovery of specific behavioral effects of several neuropeptides and the expanded appreciation of a wide range of endocrine disturbances in depressive illness have recently renewed interest in the nature of the relationship between mood and endocrine changes. Major depressive disorders are a major and life-threatening complication of Cushing's syndrome, Addison's disease, hyperthyroidism, hypothyroidism and hyperprolactinemic amenorrhea. A treatment primarily directed to the physical condition may be more effective than antidepressant drugs in such organic affective syndromes. The influence of hormonal disturbances in the development of depression in Conn's disease, pheochromocytoma, parathyroid disturbances, SIADH, acromegaly, hirsutism and other endocrine diseases should be individually evaluated. Antidepressant drugs remain the most specific and readily available treatment of major depressive disorders in the setting of endocrine illness.

Source: Medline
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22. Familial manic depression, phenylketonuria and acromegaly.

Author(s) Ananth J, Brown RD, Kravitz E

Citation: Canadian Journal of Psychiatry - Revue Canadienne de Psychiatrie, April 1982, vol./is. 27/3(258-60), 0706-7437;0706-7437 (1982 Apr)

Publication Date: April 1982

Source: Medline
Available in print at

23. Growth hormone and prolactin responses to TRH in unstable diabetic patients
Abstract: In normal subjects, administration of thyrotropin releasing hormone (TRH) does not elicit growth hormone (GH) release. In several abnormal conditions, however, such as acromegaly, renal failure, mental depression, liver disease and anorexia nervosa, TRH can evoke release of GH. Interestingly, most of these conditions are characterized by high circulating levels of GH. High fasting concentrations of GH are seen also in some diabetic patients. Therefore, to ascertain if the abnormality in the release of GH in diabetics was similarly associated with a positive GH response to TRH, this peptide was administered to a group of patients with unstable insulin dependent diabetes and the GH response evaluated. In addition, the prolactin (Prl) response to TRH was studied in the same subjects. However, the mean serum Prl in the control group was slightly elevated in comparison with the diabetic group (p<0.05). The Prl response to TRH was normal in both groups with a rise of at least 3.5 fold in all subjects. Basal serum GH levels were normal in control subjects and moderately elevated in 5 of the diabetics. Following the injection of TRH, serum GH levels rose at 30 minutes by at least 3-fold in 6 of the diabetic patients, while in all control subjects GH was unchanged at this time. The difference between the mean values of serum GH at the basal time and at 30 and 60 min after TRH injection was highly significant (p<0.021, 0.004 and 0.025 accordingly). Blood glucose levels did not change significantly during the procedure.

Source: EMBASE
Available in print at


Author(s) Margo, A

Citation: The British Journal of Psychiatry, November 1981, vol./is. 139/(467-468), 0007-1250;1472-1465 (Nov 1981)

Publication Date: November 1981

Abstract: Reports the case of a woman who at the age of 41 developed symptoms diagnosed as endogenous depression. These were accompanied by psychomotor retardation, sluggishness, and persistent headaches for which she offered bizarre etiological explanations. A variety of drug treatments over the next 12 yrs failed to relieve the symptoms. Marked facial changes led to a diagnosis of acromegaly in 1980. Detailed hormonal studies found a paradoxical rise in growth hormone after glucose administration and a rise in calcium serum, which are typical of acromegaly. Treatment with radiotherapy did not produce marked changes, but 4 mo later the patient claimed that she was free from depression and was reported to be more active. Various possible relationships between the physical illness and the psychiatric symptoms are discussed. (7 ref) (PsycINFO Database Record (c) 2012 APA, all rights reserved)

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Available in fulltext at British Journal of Psychiatry; Note: Grantham Hospital Staff Library
Available in print at

25. A case of acromegaly and gigantism with depression.

Author(s) Avery, T. L

Citation: The British Journal of Psychiatry, May 1973, vol./is. 122/570(599-600), 0007-1250;1472-1465 (May 1973)
**Publication Date:** May 1973

**Abstract:** Summarizes physical and psychiatric aspects of an 18-yr-old obese girl who was 73 in. in height. (PsycINFO Database Record (c) 2012 APA, all rights reserved)

**Source:** PsycINFO

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**Growth hormone (GH) secretion following GH-releasing hormone in depression: correlation with clonidine-induced GH release**  
KP Lesch, G Laux, A ERB, H PFÜLLER… - Acta …, 1988 - EFES  
... promise as an aid in extending the understanding of the pathophysiology underlying the ... G., Beckmann, H.: Growth hormone (GH) response to GH-releasing hormone in depression. ... p=n-1995via an implantable pump system in therapy-resistant acromegaly  
G. HILDEBRANDT ...  
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**Psychoneuroendocrinology of depression: growth hormone**  
TG Dinan - Psychiatric Clinics of North America, 1998 - Elsevier  
... The impact of GHRPs on GH release has been investigated in several conditions including anorexia nervosa, 86 acromegaly, 21 and ... the expense of the nocturnal period, probably as a result of changes to the neurotransmitters involved in the pathophysiology of depression. ...  
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S Melmed - New England Journal of Medicine, 1990 - Mass Medical Soc  
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**Psychotic reactions during treatment of pituitary tumours with dopamine agonists**  
TH Turner, JC Cookson, JA Wass, PL Drury… - British medical journal ( ..., 1984 - bmj.com  
... Br Med J 1983 ;286 :50-1. 17 Margo A. Acromegaly and depression. ... Department of Clinical Chemistry, Glostrup Hospital, University of Copenhagen, Denmark L NILAS, MD, physician C CHRISTIANSEN, MD, director Department of Clinical Physiology, Aalborg Hospital ...  
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BM Arafah, MP Nasrallah - Endocrine-Related Cancer, 2001 - Soc Endocrinology
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McCune–Albright syndrome associated with acromegaly and bipolar affective disorder
P Ozcan-Kara, B Mahmoudian, B Erbas... - European Journal of ..., 2007 - Elsevier
... unable to cope with a regular job and more recently suffered from recurrent attacks of mania and depression. ... Acromegaly or gigantism is known as being a rare endocrinopathy. ... in protein kinase C activity and Gα s may play a significant role in the pathophysiology of bipolar ...
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Acromegaly Presenting as Psychotic Disorder in a Patient with Familial Autosomal Dominant Polycystic Kidney Disease
M Kannabiran, V Singh, S Grewal - 2006 - gipsy.uni-goettingen.de
... there was no in-crease in psychiatric morbidity in general or in depression in particular. ... Given that acromegaly is a rare disorder, it is highly unlikely that its association with ... Not- withstanding the lack of information regarding the patho-physiology, this case reinforces the need to ...
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AL Barkan - Trends in Endocrinology & Metabolism, 1992 - Elsevier
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KP Lesch, R Rupprecht - Journal of neural transmission, 1989 - Springer
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D Sachse - AJN The American Journal of Nursing, 2001 - journals.lww.com
... PATHOPHYSIOLOGY. ... Side effects include gastrointestinal upset, nausea, vomiting, and transient postural hypotension, depression, and nightmares. ... Most patients with acromegaly treated with octreotide are relieved of headaches, joint pain, and diaphoresis soon after beginning ...
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