

# A woman in her 50s with manic psychosis

A woman who was compulsorily hospitalised for manic psychosis proved to need quite different treatment from what was first assumed necessary.

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*A woman in her late 50s with no prior history of mental disorder was compulsorily hospitalised under the Mental Health Act to an acute psychiatric ward for psychiatric assessment because she was perceived as psychotic by the A&E doctor. She had been at the family cabin with her husband for a few weeks, and in the last two days had become increasingly agitated and restless, talking loudly and disjointedly and sleeping little.*

*On admission to the psychiatric ward she was oriented with respect to time, place and situation. She had pressured speech, a euphoric mood and motoric acceleration. There were no signs of hallucinosis or evident flawed logic in her thinking. The patient was previously healthy, apart from known, correctly treated hypertension. On admission she complained of vague pains in the shoulder and neck that were difficult to describe precisely. Her temperature and blood tests were normal. Since it was a case of a first-episode psychosis, CT of the brain was ordered, and this was negative.*

Given her physical restlessness, reduced need for sleep, pressured speech and elated mood calling for hospitalisation, the patient fulfilled the diagnostic criteria for acute mania (Table 1) (1). Because of the acute onset, delirium (acute confusion) was a possible differential diagnosis, but it was regarded as improbable because she was oriented with respect to time, place and situ-

ation, and neither the content nor the level of her consciousness was altered. Nor were there any factors that might cause a disposition to delirium, such as fever, metabolic disorder, abuse of drugs/alcohol or dementia. No significance was attached to the pain in her neck and shoulder at this point.

*The patient was treated for two days with oxazepam 25 mg × 3 and quetiapine 50 mg + 150 mg per day for mania, but this had only a moderate effect. She began to complain of severe pain in the neck and shoulder musculature, and her gait became more unsteady and staggering.*

The moderate effect of medication, the patient's age, pain and neurological symptoms in the form of unsteadiness and impaired walking function led to the suspicion that the patient's mania was secondary to a neurological disease. Following neurological examination, she was therefore moved to the Neurology Department for further assessment, two days after her arrival.

*The patient complained of neck pain on admission to the Neurology Department. A clinical examination revealed reduced strength in the right hand and tense neck musculature. There was no stiffness of the neck or fever. Blood tests, CT of the brain and X-rays of the shoulder and neck were normal. A spinal puncture was performed, and the cerebrospinal fluid was pathological with an elevated cell count of 351 leukocytes per mm<sup>3</sup> (reference range ≤ 4), and protein 1.60 g/l (reference range 0.10–0.40 g/l). She could not recall having had either a tick bite or an erythema migrans-like rash.*

Neck pain, reduced strength in the right hand and cerebral symptoms in the form of mania accompanied by an elevated cell count in the spinal fluid gave rise to suspicion of a combination of meningoradiculitis and encephalitis, probably caused by a virus or a borrelia infection (neuroborreliosis). Other possible causes, such as purulent bacteria infection or an autoimmune disease/vasculitis were regarded as less probable because of the lack of systemic signs of

infection, the mononuclear appearance of the leukocytes and normal blood tests.

*Treatment for meningoencephalitis was started, with intravenous aciclovir (750 mg × 3) and ceftriaxone (2 g × 1) because of suspicion of a virus or borrelia infection. The symptoms declined substantially in the course of a couple of days. After three days the polymerase chain reaction test (PCR) for herpes simplex in the spinal fluid was negative, and acyclovir was terminated. Borrelia antibody analysis revealed an elevated serum level (IgM was found, but not quantified, and IgG was 144 mg/l), but there was a normal ratio between the serum level and the cerebrospinal fluid (negative borrelia antibody index). Treatment with ceftriaxone continued. After six days, a cerebrospinal fluid test showed a decline in the number of leukocytes to 185 per mm<sup>3</sup>, but the borrelia antibody index was still negative. She was discharged in a satisfactory condition after 14 days of ceftriaxone treatment with the diagnosis probable neuroborreliosis. No appointment was made for follow-up.*

*After two months she was hospitalised again because of tiredness and suspected recurrence. Her neurological and psychiatric status was then normal. The cell count in her cerebrospinal fluid was normal, but the borrelia antibody index was now positive.*

**Table 1** Diagnostic criteria for mania (ICD-10). For a diagnosis to be made, A plus at least 3 B symptoms must be present.

A.	Elated, expansive or irritable mood for at least a week or hospitalisation is required
B.	At least three of the following symptoms (four if mood is only irritable)
a.	Increased activity/physical restlessness
b.	More talkative
c.	Flight of ideas or subjective sense of racing thoughts
d.	Loss of usual social inhibitions resulting in inappropriate behaviour
e.	Decreased need for sleep
f.	Strongly inflated self-esteem or grandiosity
g.	Distractibility or constant changing of plans or activity
h.	Risky or reckless behaviour
i.	Pronounced increase in sexual energy or uncritical sexual behaviour

**Table 2** Somatic causes of secondary mania (modified from (6))

Medication	Intoxicants	Metabolic disorders	Neurological disease
Anabolic steroids	Alcohol	Anaemia	Cerebrovascular disease (particularly right side)
Antidepressants	Amphetamine	Cushing's syndrome	Dementia
Benzodiazepines	Ecstasy	Electrolyte disorder	Encephalitis
Captopril	Cocaine	Hyperthyreosis	HIV infection
Enalapril	Metamphetamine	Influenza	Huntingdon's Disease
Oestrogen		Uraemia	Neurosyphilis
Calcium		Vitamin deficiency (B <sub>12</sub> , niacin)	Sydenham's chorea
Levodopa			Traumatic brain injury
Lithium overdose			Tourette's disease
Termination of steroids			Tumor cerebri
Steroids			Wilson's Disease
Sympathomimetics			

These findings dismissed the suspicion of recurrence of encephalitis, but confirmed that she had suffered neuroborreliosis. Her tiredness was regarded as a natural consequence of suffering encephalitis in combination with a heavy work load. She was discharged without specific treatment and was told she could expect a gradual improvement of the tiredness. After her discharge she was followed up by the mental health service and has been hospitalised once in a regional psychiatric centre. The reason for her admission was suspected depression, which could not be confirmed. But the patient was tired because of a heavy work load, and she was given a short respite stay.

At her last check-up, just over four months after her first hospitalisation, the patient appeared to be mastering her life situation. She was still struggling with the after-effects of the borreliosis in the form of headache and fatigue, but was improving.

The diagnosis of definite neuroborreliosis is based on clinical neurological symptoms accompanied by the findings of an elevated number of leukocytes in the cerebrospinal fluid and a positive borrelia antibody index. The suspicion of neuroborreliosis in our patient was maintained in an early phase and treatment was completed even though the antibody index was negative in the first two cerebrospinal fluid tests. The diagnosis was confirmed after two months, when the antibody index was positive. The antibody response is often delayed in borrelia infections (2). In an early phase of neuroborreliosis (symptom duration less than six weeks) the antibody index is negative in about 26%, and serum may also be antibody negative. Our patient was almost symptom-free after the antibiotics treatment, but after a while noticed reduced working capacity and tiredness. Recurrence of the infection was suspected, but a normal cell count in the cere-

brospinal fluid disproved this. The presence of antibodies alone did not indicate an active infection. It has recently been shown that about 50% of patients suffer from tiredness 30 months after being treated for neuroborreliosis.

### Discussion

Mania is a pathological condition characterised by an elated mood and heightened physical and mental activity. The mood is not in keeping with the patient's situation, and may vary from carefree joviality to uncontrollable exhilaration. The exhilaration is accompanied by increased energy which leads to overactivity, incessant talking and a reduced need for sleep. Attention cannot be retained, and the person is easily distracted. Self-esteem is often inflated, with grandiosity and excessive self-confidence. Loss of normal social inhibitions may lead to behaviour that is frivolous, reckless or inappropriate and atypical of the person. Mania can be confused with delirium – a state of confusion that is characterised by acute onset, disorientation, visual hallucinations and a fluctuating level of consciousness (4).

Mania is often part of bipolar disorder (primary mania), but there may also be many other causes (secondary mania). The lifetime prevalence of primary mania is 1% (5). The prevalence of secondary mania is far more difficult to quantify because of great variation in the different sub-groups. Secondary mania may be due to medication, intoxicants, metabolic disturbances or neurological disease (Table 2) (6). It may be difficult to identify secondary mania. Advanced age and somatic symptoms point to increased suspicion. Elderly adults are in the danger zone because of a higher prevalence of medical and neurological diseases. Mania in the elderly is often incorrectly diagnosed as dementia with agitation (7).

It is worth noting that mania and other

psychiatric symptoms may be due to neurological disease even if the image representations of the brain (CT, SPECT and MRI), electroencephalography (EEG) and blood tests are normal. This increases the need for a thorough neurological examination, including spinal fluid analysis, in an early phase. Spinal fluid tests may be useful for identifying infection (neuroborreliosis, neurosyphilis, viruses and other infectious agents that may cause encephalitis), carcinomatosis, autoimmune diseases and some neurodegenerative diseases (dementia, Creutzfeldt-Jakob's Disease) (8).

Lyme borreliosis is a tick-borne infection caused by the spiral bacterium *Borrelia burgdorferi*. The disease may be localised to the skin (erythema migrans) or disseminated to other organ systems, most commonly the nervous system. Most cases of disseminated disease that are reported to the Norwegian Surveillance System for Communicable Diseases (MSIS) come from the counties of Aust-Agder, Vest-Agder, Vestfold, Telemark, Sogn og Fjordane and Møre og Romsdal, but cases have also been reported further north in Norway (8).

Borrelia infection in the nervous system (neuroborreliosis) may give rise to a number of different symptoms that are all accompanied by an elevated number of mononuclear leukocytes in the cerebrospinal fluid (7). The most common symptoms are pain (located in the neck, back, chest, abdomen or limbs) due to meningoradiculitis, and facial paresis. In rare cases, the infection may attack the central nervous system and cause confusion, tremor and other involuntary movements, unsteadiness, single-side paralysis, aphasia and psychosis. The diagnosis neuroborreliosis is based on the presence of neurological symptoms combined with a concurrent elevated number of lymphocytes in the cerebrospinal fluid and borrelia antibody production revealed by a high ratio between the levels in spinal fluid and serum (also called positive antibody index). However, the antibody index in cerebrospinal fluid is negative in about 26% of patients in the early phase (symptom duration less than six weeks), and serum may also be antibody negative (9). Fewer than half have a definite elicited history with a tick bite or erythema migrans. Antibiotic treatment results in rapid relief of symptoms and should be started as soon as there is clinical suspicion of neuroborreliosis and a high number of lymphocytes are found in the spinal fluid. The elapse of a long period from the onset of symptoms to treatment is associated with a higher frequency of long-term problems (3, 10). Doxycycline tablets 200 mg daily for 14 days is just as effective as intravenous ceftriaxone in cases of affection of the peripheral nervous system (facial paresis and meningoencephalitis), but for encephalitis many would recommend intravenous ceftriaxone twice daily for 14 days (11).

Our patient suffered from mania caused by borrelia encephalitis. Various psychiatric symptoms of neuroborreliosis have been described (12, 13), but the onset of a manic pathological picture has not previously been described in Europe. A case history from North America describes a patient who developed a bipolar-like syndrome with both depression and mania as the first symptoms of borrelia infection (14). The many manifestations of neuroborreliosis indicate that it should be regarded as a possible differential diagnosis and cerebrospinal fluid should be tested on the first manifestation of psychotic illness, particularly when it is accompanied by pain.

### Conclusion

In the case of first-episode psychosis, including mania, a neurological cause should be considered even if the image representation of the brain and the blood tests are normal. Neuroborreliosis and other encephalitic diseases are diagnosed by means of spinal fluid tests, and rapidly applied treatment improves the prognosis.

*The patient has consented to the publication of the article.*

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#### Litteratur

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## Comment

### Demanding diagnostics – important diagnosis

There is little probability of a healthy patient who has not previously had psychiatric problems becoming manic in her late 50s without there being an organic reason for it.

The somatic diagnostics may be demanding. It is necessary to examine possible neurological, metabolic, medicinal and intoxicant-related causes. The patient had early symptoms such as impaired strength and unsteady gait which pointed in a neurological direction. Many conditions do not show up on a CT or, less commonly, on an MRI either. A lumbar puncture should be performed early.

Antibodies develop slowly in borreliosis, and serological tests are frequently negative, particularly in the early stages of the disease (1). The incubation period may be long, so that in many cases the patient is not aware of exposure. The diagnostic challenges can be illustrated by the fact that the disease is also called «the new great imitator». Neuroborreliosis has become the most frequently occurring neuroinfectious condition in Europe where the source of infection is a vector (2). The prevalence is increasing, probably partly due to vegetation changes and a milder climate.

The most common psychiatric symptoms are tiredness and depression, but panic attacks, schizophrenia-like symptoms and hallucinations may also occur (2).

The patient was hospitalised two months later on suspicion of depression, but the diagnosis was not confirmed. However, she was suffering from tiredness, a common sequela that can last a long time. After completion of treatment, regional hypoactivity with respect to blood supply and metabolism was also found, particularly in the temporal and parietal lobes and in the limbic system (3).

In addition to neurological and psychiatric symptoms, skin manifestations in particular are common, but the heart and limbs may also be affected.

Although the prognosis is normally good, a sneaking development may mean that more areas of the brain may be affected before diagnosis and treatment, resulting in a protracted course for the disease.

The treatment may be difficult because the bacterium has developed many defence mechanisms. The treatment is often successful if it is applied early, but a chronic infection may be difficult to treat (1).

Early diagnosis and treatment is important with a view to shortening both the course of the active disease and the restitution period. Since the symptoms presented can be so variable, it is useful for rare cases, such as the present one, to be published.

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