Chronic myeloid leukemia presenting as paraneoplastic ocular myasthenia gravis

case report

A 47-year male presented to us with a history of gradual onset progressive weakness, fatigue and dragging sensation in the abdomen for a duration of 3–4 months. He also had progressive ptosis with diplopia occurring 20 days before his presentation to our outpatient department. He had no other associated systemic complaints. The patient had a karnofsky performance status of 90 and an unremarkable general examination. A neurological evaluation revealed bilateral ptosis (Figure 1), accentuated more on upward gaze and bilateral complete external ophthalmoplegia. There were no other associated neurological deficits. Other systemic examination revealed only a splenomegaly of 6 cm without hepatomegaly.

Figure 1. Bilateral ptosis.
Routine investigations revealed leukocytosis (138 \times 10^9/mm^3) with peripheral smear suggestive of a myeloproliferative disorder. A bone marrow evaluation and RT-PCR studies revealed positivity for bcr–abl fusion transcript, thus confirming the clinical diagnosis of chronic myeloid leukemia (CML) in chronic phase. The serum biochemistry and thyroid hormone studies were normal. Cerebrospinal fluid analysis was unremarkable. Computed tomography study of thorax and magnetic resonance imaging of brain and orbits were normal. In view of unavailability of edrophonium, a neostigmine test was done which was positive. Nerve conduction studies showed a decrement response typical of myasthenia. Antiacetylcholine receptor antibody by radioimmunoassay was positive. A final diagnosis of CML in chronic phase with associated ocular myasthenia gravis was made.

The patient was put on imatinib 400 mg once a day. He was also started on steroids and pyridostigmine therapy. Patient was under constant follow-up. His leukocytosis reverted to normalcy while ptosis persisted at the end of 4 weeks and so the steroids and pyridostigmine were stopped and patient was continued on imatinib. Re-evaluation at the end of 12 weeks showed regression of spleen with a complete hematological and cytogenetic response. The patient also had complete resolution of ptosis and ophthalmoplegia (Figure 2). The antiacetylcholine receptor antibody test was negative. In view of resolution of ocular signs and symptoms with complete hematological and cytogenetics response with imatinib therapy a diagnosis of CML in chronic phase with paraneoplastic ocular myasthenia gravis was made.

Paraneoplastic phenomenon in CML is exceptional. There was one case report of paraneoplastic digital necrosis with CML which occurred after 4 years of diagnosis of CML [1, 2]. There have been a few case reports of development of CML in a patient with existent myasthenia gravis (generalized form) following thymectomy or following long-term 6-mercaptopurine treatment [3, 4]. In the latter reports, the diagnosis of generalized myasthenia gravis preceded the diagnosis of CML thereby suggesting secondary CML or therapy-related CML. Clinical profile and thorough evaluation of our patient revealed that he presented with ocular myasthenia gravis along with CML which responded to imatinib therapy. This was suggestive of a extremely unusual paraneoplastic phenomenon in a patient of CML. Our patient’s case is first of its kind in having paraneoplastic ocular myasthenia gravis in a patient of CML. This has not been reported so far in available literature.

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