

Subcutaneous oedema as a presenting feature of polymyositis/dermatomyositis: a poor prognostic indicator?

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Abstract

Widespread subcutaneous oedema is a rare presenting feature of polymyositis (PM)/dermatomyositis (DM). It was reported in the initial description of the disease by Wagner in 1877 but only nine cases have since been reported in the literature and it is not listed in standard textbooks of rheumatology. We present a further case of subcutaneous oedema as a presenting feature of dermatomyositis, briefly review the existing literature and postulate that this presentation represents a subset of the disease with a poorer prognosis.

Keywords

Subcutaneous oedema; dermatomyositis.

Case history

A 29-year-old woman of Bangladeshi origin presented with a 4-week history of widespread arthralgia, myalgia, fatigue, facial oedema, swollen upper limbs and a rash. Examination revealed a heliotrope rash across the eyes, muscular tenderness, marked periorbital and generalised facial oedema and distal upper limb oedema (non-pitting). Muscle power was normal and there were no other abnormal findings on general examination.

The ESR was 28 mm/h, CRP 11 mg/l, ALT 101 IU/l (normal range 5–40), AST 106 IU/l (12–40), CPK 253 IU/l (24–170) and LDH 1000 IU/l (240–480). Antinuclear antibody was weakly positive; thyroid peroxidase antibodies were strongly positive at 480 IU/ml (normal <50 IU/ml) but rheumatoid factor, anti Jo-1, ANCA and dsDNA antibodies were all negative. Hepatitis B, hepatitis C and HIV serology were all negative.

In the absence of muscle weakness, treatment was initiated with oral prednisolone 20 mg daily for presumed urticarial vasculitis. Progressively, however, the patient developed proximal muscle weakness. An electromyogram showed evidence of increased membrane irritability in the form of increased insertional activity and spontaneous fibrillations, abnormal myopathic low amplitude, short duration polyphasic motor potentials and bizarre high frequency discharges affecting proximal more than distal limb muscles. A left deltoid muscle biopsy showed an inflammatory cellular infiltrate with muscle fibre necrosis and regeneration. A skin biopsy showed perivascular lymphocytic infiltration with dermal oedema. An initial chest X-ray was normal but pulmonary

Table 1 Characteristics of 10 patients with severe subcutaneous oedema as presenting feature of DM/PM

Age	Sex	Diagnosis	Presentation	Lab results	Muscle biopsy	Skin biopsy	Treatment	Outcome	Duration of illness
29	F	DM	4 week myalgia/arthralgia, facial and upper limb oedema; heliotrope rash. muscle weakness later event	ESR 28, ANA +, CPK 253	Inflammatory infiltrate suggestive of DM	Perivascular lymphocytic infiltrates with dermal oedema	Prednisolone 40 mg/day, IV methylprednisolone, IV cyclophosphamide	Progressive muscle weakness, PCP pneumonia, died	4 months (this case)
78	F	DM	10/7 fatigue, proximal muscle weakness, erythematous rash, oedema both upper limbs	ESR 'N', ANA +, CPK 5700 (15-195 IU/l)	Perifascicular muscle fibre necrosis/regen; perivascular and interstitial infiltrate	-	Prednisolone 60 mg/day, MTX 10 mg/week	Oedema and muscle weakness resolved in 2/52, fatal PE at 6/52	8 weeks ^[7]
31	M	DM	7/7 fever, mouth ulcers, proximal weakness, maculopapular rash; forearm oedema at 10/7	ESR 12, ANA -, CPK 26, 320 (24-195 IU/l)	Necrotic degenerative and regenerative fibres with inflammatory infiltrates	Lymphocytic and histiocytic infiltrates around vessels of dermis; dermal oedema	Hydrocortisone 600 mg/day, IV Ig 30 g/day for 5/7, prednisolone 70 mg/day on d/c	Dysphagia and aspiration pneumonia day 20, subsequent recovery	4 months ^[6]
63	M	DM	14/7 fever, prox muscle pain and weakness, maculopapular rash; forearm oedema at 21/7	ESR 20, ANA -, CPK 14, 560	Perivascular and interfascicular inflammatory infiltrates, necrosis and regeneration	Dermal oedema and perivascular lymphocytic infiltrates	None	Spontaneous recovery	1 month ^[6]
27	F	DM	8/52 forearm oedema, 4/52 heliotrope rash, malar rash, 2/52 prox muscle weakness	ESR 'N', ANA -, CPK 1454 (0-195 IU/l)	Perivascular inflammation -	-	Prednisolone 1 mg/kg per day, azathioprine 2 mg/kg per day, main Rx stopped 7/12	Recovery of enzymes and power 48h; oedema gone 2/52. Well 2 years f/u	10 weeks ^[5]

56	M	PM	10/7 arm and leg swelling, arthralgia, prox muscle weakness and pain	ESR 35, ANA -, CPK 1300 (<300 IU/l)	Degeneration and regeneration muscle fibres	Small vessel vasculitis and dermal oedema	Methylprednisolone 48 mg/day; tapered after 2/12; 6 mg/alternate days 12/12 f/u	Weakness/oedema persisted, bulbar palsy and aspiration pneumonia 6 weeks; recovered	2 months ^[4]
65	M	PM	Acute presentation: prox muscle pain/weakness. Underlying oesophageal carcinoma. Oedema upper limbs	ESR 123, CPK 448 (24-195 IU/l)	-	-	None	Recovery	Not reported ^[3]
52	M	PM	Prox muscle pain and weakness. Dysphagia and resp failure. Oedema all 4 limbs	CPK 9000 (24-195 IU/l)	-	'Normal'	Prednisolone, azathioprine	Died	6 weeks ^[2]
32	M	PM	Prox limb oedema all 4 limbs. Prox muscle pain and weakness	CPK 561	-	'Normal'	Prednisolone	Recovery	Not reported ^[2]
73	M	PM	Prox muscle pain and weakness. Dysphagia, respiratory failure. Oedema all 4 limbs	CPK 2940	-	'Normal'	Prednisolone, azathioprine	Died	4 months ^[2]

function tests showed a restrictive defect with reduced transfer factor; a high resolution CT scan of the chest demonstrated bilateral basal ground glass shadowing.

The prednisolone dose was increased to 20 mg twice daily, 3 weeks after admission. The facial and upper limb oedema responded over a 1-week period. The proximal muscle weakness however rapidly progressed such that the patient had difficulty sitting up. Despite intravenous (IV) methylprednisolone 500 mg on three successive days, the patient's clinical condition continued to deteriorate and she was given one pulse of IV cyclophosphamide 500 mg on day 51.

Nine days later, the patient developed a fever and respiratory failure requiring intubation and transfer to the intensive care unit. Repeat chest X-ray revealed bilateral interstitial infiltrates to the mid-zones; bronchoscopy with bronchoalveolar lavage confirmed a diagnosis of *Pneumocystis carinii* pneumonia. There was no evidence of respiratory muscle weakness. Despite aggressive antimicrobial therapy and continuation of prednisolone, the patient had a prolonged ITU admission with recurrent infections and unsuccessful attempts to wean her from respiratory support. She eventually passed away 4 months after her initial admission.

Discussion

Generalised subcutaneous oedema is a rare presenting feature of inflammatory myositis. Indeed, in the case described here, the oedema was so florid that an alternative diagnosis was postulated until the patient developed progressive muscle weakness.

Details of the ten cases described in the literature are listed in Table 1.

There are some important differences when this data set is compared to a more general population of patients with DM/PM. First, it appears to be more common in men, with a M:F ratio of 3.3:1, which is a reverse of the normal 1:2–1:5 ratio described elsewhere^[8,9]. Only 2 out of 6 patients in whom the information was recorded were ANA positive, compared with 80% DM/PM patients in general^[8].

More importantly, the mortality rate from this data is 50%. The accepted 5-year mortality rate for DM/PM is 10–20%^[9] which would suggest a much higher mortality rate in patients presenting with generalised oedema.

The cause of these differences is unclear. Obviously with such small numbers, these figures may not be truly representative. Most of the cases described had a very acute onset of symptoms and that is known to carry a poorer prognosis. Additionally, in those patients that died, several had bulbar dysphagia and/or respiratory muscle weakness; all had a poor response to treatment and in the case of our patient, also had interstitial lung disease, again all independent predictors of poor outcome. Perhaps subcutaneous oedema is simply a marker of very active inflammation (widespread active vasculitis, increased capillary permeability and subsequent tissue oedema) and as such is just a surrogate marker for poor prognosis. Alternatively, maybe an as yet unidentified factor is implicated in the pathogenesis of both the oedema and the underlying inflammatory muscle disease.

Whatever the underlying mechanism, more cases are needed to establish whether DM/PM associated with generalised subcutaneous oedema does carry a poorer prognosis and to try and elucidate which treatments, if any, are most likely to be successful in managing this subgroup of patients.

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