Introduction

Monosomy 1p36 is a relatively common chromosomal abnormality with prevalence between 1:5,000 and 1:10,000 births [6,1]. A partial monosomy of 1p36 was originally described in 1980 in an infant who inherited an unbalanced translocation...
from a parent with a balanced familial 1:15 translocation [2].

Typically, patients with monosomy 1p36 tend to have distinguishing malformations including: characteristic facial changes, feeding difficulties, congenital heart defects, ophthalmologic abnormalities, hearing loss, genitourinary malformations, orofacial clefts, and developmental delay [3]. Less common malformations include: telangiectatic skin lesions, polydactyly, congenital spinal stenosis, congenital myopathies, redundant skin at the nape of the neck, intestinal malrotation, annular pancreas, liver steatosis, hypertrophic pyloric stenosis, anteriorly placed imperforate anus, neuroblastoma, and pemphigus vulgaris [4].

Arthritis is yet to be recognized as a part of the monosomy 1p36 constellation [5]. Interestingly, juvenile rheumatoid arthritis (JRA) is known to be more common in patients with chromosomal anomalies such as trisomy 21 and turner syndrome etc [6,7,8,9]. Importantly, the joint involvement in JRA is synovitis leading to inflammation, joint effusions and reduced range of movement. Significant redness of joints is not particularly suggestive of JRA but more suggestive of infective arthritis. Joint inflammation predominantly due to soft tissue swelling without synovitis that was found in our patient is not typical of inflammatory arthritis. To our knowledge, this will be the first description of a monosomy 1p36 patient with atypical arthropathy, which was responsive to steroids and immunosuppression.

**Case Report**

The patient documented in this report is an 11-year-old white male of Northern European and German descent. He is currently at the 3rd percentile for weight and the 6th percentile for height. He was a typical case of monosomy 1p36 that was diagnosed at birth. The patient was referred to the rheumatology clinic at Women’s and Children’s Hospital at Columbia Missouri, for two months history of red, swollen and painful joints. On musculoskeletal examination his eight PIP joints in bilateral hands were red, swollen, warm, and tender to palpation and he could not make a adequate fist. Apart from this his right wrist was swollen and warm to touch with restricted flexion and extension. He was limping while walking and his right hip had restricted internal rotation and pain on movement. All other joints were within normal limits. His
systemic examination along with review of systems was unremarkable otherwise.

The patient’s family history was unremarkable for any kind of arthritis or autoimmune diseases. The patient has two healthy siblings 3 and 5 years older than him. The patient lived with his parents on a farm in the rural Missouri. The patient did have history of tick bites.

Upon presentation the patient was on a regimen of oral Valproic Acid 375 mg twice a day and levocarnitine 300mg/3mL oral twice a day orally. He was up to date on his vaccinations.

Diagnostic evaluations of the patient were then pursued. Initial blood draw revealed normal white cell count (WBC) of 6700/mcl (4000 – 12,500) with 67% lymphocyte predominance [34 – 39], Erythrocyte Sedimentation Rate (ESR) of 1 mm/hr (0 – 13), normal renal function such as blood urea nitrogen (BUN) of 19 mg/dL [5 – 18], Creatinine (Cr) of 0.3 [0.4 – 0.8], and a completely unremarkable comprehensive metabolic panel(CMP). Titers for Lyme IgM and IgG antibodies, Mycoplasma IgM and IgG antibodies, Parvo virus B19 IgM and IgG antibodies, tick bone diseases serology, Group A Streptococcus antibody anti DNAse B, and Antistreptolysin O (ASO) titer were all negative. His Rheumatoid factor (RF) and Anti-cyclic citrullinated peptide antibody (CCP), were negative. The patient was also negative for HLA-B27.

Imaging was also ordered and MRIs of the right hand and right hip were obtained pre- and post-contrast. MRIs of the joints were remarkable for significant soft tissue swelling in PIPs and around right wrist. There were no effusions in the joints, no synovial thickening, nodularity, or abnormal enhancements identified in the contrast MRI scan. There was no bone edema. There were a few subchondral cysts observed in the distal fourth proximal phalanx and trapezoid. No erosions of the bone were observed. The muscles that could be visualized were unremarkable.

Balancing MRI report and clinical findings, the patient was continued on a treatment regimen of 0.125mg/kg of meloxicam PO with a follow-up scheduled six weeks after the initial visit. Upon follow-up, the primary caregiver who was the mother reported the patient was experiencing only minor relief in his symptoms and was still not able to effectively use his hands due to pain. The mother also reported the patient was limited in his other routine daily activities due to pain. The physical examination and the review of systems remained unchanged during this visit. The results and options were discussed with the mother, and a decision was made to perform joint aspiration followed by trial steroid (Triamcinolone Hexacetonide) injections in the patient’s proximal interphalangeal joints of the 2nd, 3rd, 4th and 5th fingers of each hand and right wrist without complication [10]. The joint aspiration revealed clear thin synovial fluid with later unremarkable biochemical analysis and culture results.

The follow-up visit occurred eight weeks after the intra-articular injections, and the mother reported a marked improvement of symptoms in the joints, which were injected with steroids. Unfortunately the patient developed new joint swellings in the interphalangeal joints of his toes bilaterally. The patient’s right hip pain and limp persisted in spite of being on Meloxicam and physical therapy.

After discussion with the parents, the patient was started on methotrexate 10mg/M2, which was later optimized to 15mg/M2 once weekly. The meloxicam therapy was continued. A follow-up was scheduled in eight weeks after the visit.

At the two-month follow-up, the parents reported definitive clinical improvement. At this time, the patient exhibited continued improvement on the current medical regimen of meloxicam and methotrexate and have no active joints, 6 months since he has been on the therapy.

**Discussion**

There is only limited published literature [9] on association between arthropathy and some particular chromosomal abrasions such as Down’s Syndrome [11,12], Turner Syndrome [13, 14], 22q11 deletion syndrome [15-17] and 18q deletion syndrome [18, 19] but none for monosomy 1p36 syndrome. Here we report a case of monosomy 1p36 with an atypical but immunotherapy and steroid-responsive arthropathy. The arthropathy in this case presented atypically, with significantly red, swollen, tender joints with reduced range of movement but without effusion or synovial enhancement on
This arthropathy responded well to immuno-suppressive therapy and steroid intra-articular injections as other “T” cell mediated inflammatory arthritis do. This case is the first to our knowledge to demonstrate this atypical arthropathy especially in a patient with monosomy 1p36. The joint swelling mostly involving subcutaneous tissue swelling with minimal or no synovial enhancement are known in joint involvement in patients with Henoch-Schonlein Purpura (HSP) and in patients with Sarcoidosis. It is as of yet not clear whether our patient has an atypical form of juvenile rheumatoid arthritis [2,9], or perhaps a previously undescribed atypical arthropathy that may be associated with the monosomy 1p36 constellation, which responds to immuno-suppressive therapy.

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**References**


