

DRESS syndrome from cefadroxil confirmed by positive patch test

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A 51-year-old man was diagnosed with osteomyelitis, a complication that developed in the aftermath of an orthopedic surgery on his right tibia. He took cefadroxil 500 mg bid for 9 weeks until his admission to our hospital. A week prior to his admission, he had developed fever, myalgia, arthralgia, and skin rash.

Physical examination showed that he had mild fever, generalized maculopapular exanthem, and multiple purpuric patches which gradually developed to exfoliative dermatitis. No lymphadenopathy was found. Pus was found on the gaping wound on his right tibia. Laboratory tests found leucocytosis ($80.43 \times 10^3/\mu\text{l}$), absolute eosinophilia ($33.780/\mu\text{l}$), lymphocytosis ($20.911/\mu\text{l}$), atypical lymphocytes, abnormal liver, and renal function (AST 112.4 IU/l, ALT 57.6 IU/l, BUN 32.9 mg/dl, CRE 1.48 mg/dl), increasing ALP (286 IU/l) and decreasing total protein and albumin (TP 6.23 g/dl, ALB 2.78 g/dl). HBsAg were negative. *Streptococcus epidermidis* was positive on pus culture; however, the blood culture showed no bacteria.

Cefadroxil was stopped; we gave him methylprednisolone equivalent to 1.3 prednisone/mg BW/day, clindamycin 300 mg tid and wound care for a week. The patient's health condition improved remarkably, attested by laboratory tests.

The ability of patch testing to confirm cefadroxil DRESS syndrome.

He was afterwards discharged from the hospital. The methylprednisolone was continued and tapered-off for a week. Two weeks later, the DRESS syndrome relapsed. Treatment with a similar dosage of methylprednisolone, with a slower gradual tapering-off for 4 weeks was performed until complete recuperation. Three months later, he underwent orthopedic surgery to rectify the orthopedic ailment and within 11 months he had a patch test.

The test used 30% of commercialized cefadroxil powder in white petrolatum and water. Pure white petrolatum and water served as a placebo. The test spot was taped-strapped 10 times prior to occluding the test materials for 48 h. The same test was performed on five healthy volunteers who had not had any prior exposure to cefadroxil and one healthy nonallergic volunteer with known prior exposure to cefadroxil. Test results on the patient showed strong positive reaction on hours 48, 72 and 96, either for cefadroxil in white petrolatum and in water. Both of the placebos were negative. The results on all of the six controls were negative.

DRESS syndrome is an idiosyncratic severe adverse drug reaction that begins acutely in the first two months after initiation of the offending drug. The diagnostic criteria encompasses: (1) cutaneous eruption; (2) absolute eosinophilia ($\geq 1500/\mu\text{l}$) with or without atypical lymphocytes; and (3) systemic involvement (lymphadenopathy ≥ 2 cm, AST $\geq 2 \times$ normal, interstitial nephritis, interstitial pneumonitis, or carditis). Diagnosis is confirmed if three criteria are present (1, 2). Most commonly drugs are antiepileptic and sulfonamides. Less common offending drugs are allopurinol, gold salt, sorbinil, minocycline, zalcitabine, calcium channel blockers, ranitidine, thalidomide, or mexilatin (1, 2).

Nonimmediate type hypersensitivity reaction or a defect in ability to

detoxify the toxic metabolic product is considered to be the pathogenesis of DRESS syndrome (1–3). Patch test is the safest skin test to prove nonimmediate type drug hypersensitivity, which should be performed between 6 weeks and 6 months after complete convalescence from the drug reaction (4). To avoid the relapse of severe drug reaction, such as in DRESS syndrome case, 1–10% of commercialized form of the drug, either in white petrolatum or in water is recommended (4, 5). Tape-stripping eight to 12 times can be performed to increase percutaneous drug penetration and avoid false negative (6).

The patient underwent the test 14 months after complete convalescence; to avoid a false-negative result, 30% of commercialized cefadroxil was used, and the spot was tape-strapped 10 times. Six months later, no relapse was observed. As far as we know, this is the first case of DRESS syndrome from cefadroxil confirmed by positive patch test.

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