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Stevens-Johnson syndrome (SJS)/toxic epidermal necrolysis (TEN): Overlap syndrome secondary to ciprofloxacin and Aceclofenac: A case report

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Abstract
Background: Stevens-Johnson Syndrome/Toxic Epidermal Necrolysis (SJS/TEN) is a life-threatening mucocutaneous reaction most commonly triggered by medications.
A case of a 29-year-old male who developed SJS/TEN overlap syndrome following consumption of ciprofloxacin and aceclofenac. The patient presented with fever, extensive skin erosions, and mucosal involvement, including ocular and scrotal ulcers.
Investigations: Clinical examination revealed widespread erythematous crusted lesions. Laboratory investigations showed mild leukocytosis and deranged liver function tests. Sputum culture confirmed Methicillin-Resistant Staphylococcus Aureus (MRSA) pneumonia. Skin biopsy was consistent with SJS/TEN overlap syndrome.
Treatment: The patient was managed with systemic corticosteroids, intravenous immunoglobulin (IVIG), targeted antibiotic therapy, and comprehensive supportive care.
Outcome: Patient showed gradual improvement with reduced skin erosions and stabilization of systemic symptoms, leading to successful discharge with specialized follow-up care.

Keywords: Stevens-Johnson syndrome, toxic epidermal necrolysis, ciprofloxacin, aceclofenac, drug hypersensitivity, IVIG, corticosteroids

Introduction
Stevens-Johnson-Syndrome (SJS) and Toxic Epidermal Necrolysis (TEN) represent a spectrum of severe mucocutaneous reactions characterized by widespread epidermal detachment and mucosal involvement. The condition affects approximately 1-2 cases per million population annually, with a mortality rate ranging from 10% in SJS to 30-50% in TEN.

Etiology and Pathophysiology
Common triggering medications include anticonvulsants, antibiotics (particularly sulfonamides and fluoroquinolones), NSAIDs, and allopurinol.
The pathogenesis involves drug-induced cytotoxic T-cell activation leading to keratinocyte apoptosis through Fas-FasL interaction and perforin/granzyme pathways.

Classification
- SJS: <10% body surface area involvement
- SJS/TEN overlap: 10-30% body surface area involvement
- TEN: >30% body surface area involvement

Case Presentation
Patient Demographics and History
- **Age:** 29 years
- **Gender:** Male
- **Occupation:** Not specified
- **Past Medical History:** Tinea infection, known drug allergy to ciprofloxacin and aceclofenac

Chief Complaints

The patient presented with a 5-day history of:

- High-grade fever
- Productive cough with expectoration
- Progressive skin erosions
- Mucosal involvement

History of Present Illness: The patient had been prescribed ciprofloxacin and aceclofenac for ocular symptoms. Within 48-72 hours of medication initiation, he developed widespread reddish-crusted lesions affecting multiple body regions including eyes, face, trunk, thighs, and scrotum. Associated symptoms included lip swelling, oral mucosal ulceration, scrotal ulcers, and progressive dyspnea.

Physical Examination

On Admission

Vital Signs: Febrile, hemodynamically stable

- **General Appearance:** Acutely ill, in visible distress
- **Dermatological Examination**
- Widespread erythematous crusted lesions
- Positive Nikolsky sign
- Mucosal involvement: oral cavity, conjunctiva, genital mucosa
- Body surface area involvement: approximately 20% (SJS/TEN overlap)

Systemic Examination

- **Respiratory:** Bilateral crepitations, dyspnea
- **Cardiovascular:** Tachycardia, no murmurs
- **Gastrointestinal:** Oral mucosal erosions
- **Genitourinary:** Scrotal ulcerations

Laboratory Parameters

Investigation	Result	Reference Range
Hematology		
Hemoglobin	Normal	12-16 g/dL
Total Leukocyte Count	Mild leukocytosis	4,000-11,000/μL
Platelet Count	Normal	150,000-450,000/μL
Biochemistry		
Liver Function Tests	Mildly deranged transaminases	Normal limits
Serum Creatinine	Normal	0.7-1.3 mg/dL
Serum Electrolytes	Normal	Normal limits

Microbiological Studies

- **Blood Culture:** Negative for bacterial growth
- **Sputum Culture:** Methicillin-Resistant Staphylococcus Aureus (MRSA) isolated
- **Sensitivity Pattern:** Sensitive to Linezolid, Vancomycin

Histopathological Examination

- **Skin Biopsy:** Full-thickness epidermal necrosis with subepidermal blistering
- **Findings:** Consistent with SJS/TEN overlap syndrome
- **Special Stains:** Negative for fungal elements

Specialized Consultations

- **Ophthalmology Evaluation:** Conjunctival involvement, risk of symblepharon formation
- **Dermatology Assessment:** Confirmed SJS/TEN overlap diagnosis

Differential Diagnosis

Primary Considerations

1. SJS/TEN Overlap Syndrome (Confirmed diagnosis)
2. Staphylococcal Scalded Skin Syndrome

- Usually affects children
- Superficial skin involvement
- Positive bacterial culture.

3. Autoimmune Blistering Diseases

- Pemphigus vulgaris
- Bullous pemphigoid
- Requires immunofluorescence studies.

4. Acute Generalized ExanthematousPustulosis (AGEP)

- Pustular lesions predominant
- Rapid resolution after drug withdrawal

Diagnostic Criteria Met

- ✓ Acute onset following drug exposure
- ✓ Typical morphology with target lesions
- ✓ Mucosal involvement
- ✓ Positive skin biopsy findings
- ✓ Compatible clinical course

Treatment and Management

Immediate Management

1. Drug Discontinuation

- **Primary Intervention:** Immediate cessation of ciprofloxacin and aceclofenac
- **Drug Allergy Documentation:** Updated medical records with detailed allergy information

2. Supportive Care (Mainstay of Treatment)

Environment Control

- ICU admission for close monitoring
- Warm environment maintenance (temperature 30-32°C)
- Infection control precautions

Wound Care

- Non-adhesive dressings with paraffin gauze
- Gentle cleansing with antiseptic solutions
- Avoidance of aggressive debridement
- Daily wound assessment and documentation

Fluid and Electrolyte Management

- Modified Parkland formula for fluid resuscitation
- Input-output monitoring every 4 hours
- Electrolyte replacement as indicated
- Central venous pressure monitoring

Nutritional Support
- High-protein, high-calorie diet (35-40 kcal/kg/day)
- Protein supplementation (1.5-2 g/kg/day)
- Enteral feeding via nasogastric tube when oral intake compromised
- Vitamin and mineral supplementation

Pharmacological Management
Corticosteroids
Injection Dexamethasone
- **Dose:** 8 mg intravenous twice daily
- **Duration:** 5 days initially
- **Monitoring:** Blood glucose, blood pressure, signs of infection
- **Tapering:** Gradual reduction based on clinical response over 2-3 weeks

Intravenous Immunoglobulin (IVIG)
Protocol:
- **Dose:** 1 g/kg/day intravenous infusion
- **Duration:** 3 consecutive days
- **Administration:** Slow infusion over 6-8 hours
- **Monitoring:** Vital signs, renal function, hemolysis markers
- **Mechanism:** Anti-Fas ligand activity to prevent keratinocyte apoptosis

Antibiotic Therapy
Empirical Coverage (Initial)
- **Piperacillin-Tazobactam:** 4.5 g IV every 8 hours
- **Indication:** Broad-spectrum coverage pending culture results

Targeted Therapy (Post-culture):
- **Linezolid:** 600 mg IV twice daily for 10 days
- **Indication:** MRSA pneumonia treatment
- **Monitoring:** Complete blood count, liver function tests

Adjunctive Medications
Symptomatic Relief
- **Analgesics:** Paracetamol 1 g every 6 hours (avoid NSAIDs)
- **Antiseptic Mouthwash:** Chlorhexidine 0.2% for oral lesions
- **Topical Anesthetics:** Lidocaine gel for painful oral ulcers

Ocular Care
- **Lubricating Eye Drops:** Preservative-free artificial tears every 2 hours
- **Antibiotic Eye Ointment:** Moxifloxacin 0.5% twice daily
- **Steroid Eye Drops:** Prednisolone acetate 1% (short-term use)

Specialized Interventions
Ophthalmological Management
Acute Phase
- Daily ophthalmological examination
- Prevention of symblepharon formation
- Topical corticosteroids and antibiotics
- Artificial tear supplementation

Long-term Follow-up
- Regular assessment for corneal complications
- Management of dry eye syndrome
- Surgical intervention if required for symblepharon

Dermatological Care
Wound Management Protocol
- Daily assessment of skin integrity
- Specialized dressing techniques
- Prevention of secondary bacterial infection
- Scar prevention strategies

Urological Considerations
Genital Mucosal Care
- Gentle cleansing with normal saline
- Topical barrier creams
- Urinary catheter care to prevent trauma
- Assessment for urethral involvement

Advanced Therapeutic Options
Alternative Immunomodulatory Therapies
Cyclosporine
- **Indication:** Severe cases with poor response to standard therapy
- **Dose:** 3-5 mg/kg/day orally
- **Monitoring:** Renal function, blood pressure, drug levels

Plasmapheresis
- **Indication:** Rapid disease progression despite optimal medical therapy
- **Protocol:** Daily sessions for 3-5 days
- **Monitoring:** Coagulation parameters, electrolytes

Experimental Therapies
- **TNF-alpha Inhibitors:** Etanercept (still under clinical investigation)
- **Anti-CD20 Monoclonal Antibodies:** Rituximab (case reports only)

Nursing Care and Management
Assessment and Monitoring
Vital Signs Monitoring
- Temperature every 2 hours
- Blood pressure and heart rate every 4 hours
- Respiratory rate and oxygen saturation continuous monitoring
- Pain assessment using standardized scales every 4 hours

Skin and Wound Assessment
- Daily photographic documentation of lesions
- Assessment of healing progression
- Signs of secondary infection monitoring
- Body surface area involvement calculation

Fluid Balance Monitoring
- Hourly urine output measurement
- Daily weight monitoring
- Input-output charting every 8 hours
- Signs of fluid overload assessment

Nursing Diagnoses

1. Impaired Skin Integrity related to drug-induced epidermal necrolysis
2. Acute Pain related to skin lesions and mucosal involvement
3. Deficient Fluid Volume related to increased insensible losses
4. Anxiety related to serious illness and prognosis uncertainty
5. Risk for Infection related to compromised skin barrier

Nursing Interventions

Skin Care Interventions: Wound Care Protocol

- Gentle handling during position changes
- Use of soft, non-adherent dressings
- Application of topical antimicrobials as prescribed
- Prevention of pressure ulcers through frequent repositioning

Infection Prevention

- Strict aseptic technique during dressing changes
- Hand hygiene compliance
- Isolation precautions as indicated
- Environmental cleaning protocols

Comfort and Symptom Management

Pain Management

- Administration of prescribed analgesics
- Non-pharmacological pain relief techniques
- Positioning for comfort
- Environmental modifications (temperature, lighting)

Oral Care

- Gentle oral hygiene with soft-bristled toothbrush
- Regular mouth rinses with prescribed solutions
- Assessment of oral intake and swallowing ability
- Nutritional supplementation as required

Psychological Support

Patient Education

- Explanation of condition and treatment plan
- Medication compliance education
- Recognition of warning signs for complications
- Long-term care requirements

Emotional Support

- Active listening and therapeutic communication
- Referral to psychological counselling services
- Family involvement in care planning
- Coping strategy development

Expected Outcomes

- Client maintains adequate hydration as evidenced by normal electrolyte levels and stable vital signs
- Absence of secondary infections as evidenced by normal inflammatory markers
- Progressive wound healing as evidenced by decreasing body surface area involvement
- Pain control achieved as evidenced by patient self-report scores <4/10
- Patient demonstrates understanding of condition and treatment plan

Complications and Prevention

Potential Complications

Immediate Complications

- Sepsis and multi-organ failure
- Respiratory failure requiring mechanical ventilation
- Acute kidney injury
- Gastrointestinal bleeding
- Electrolyte imbalances (hyponatremia, hypokalemia)

Long-term Complications

- **Ocular:** Dry eye syndrome, symblepharon, corneal perforation, blindness
- **Dermatological:** Hyper/hypopigmentation, scarring, nail dystrophy
- **Genitourinary:** Urethral strictures, sexual dysfunction
- **Psychological:** Post-traumatic stress disorder, depression, anxiety

Prevention Strategies

Primary Prevention

- Comprehensive drug allergy history documentation
- HLA-B5801 screening before allopurinol initiation (in endemic areas)
- Patient education regarding drug allergies
- Medical alert identification

Secondary Prevention

- Early recognition of cutaneous adverse drug reactions
- Prompt discontinuation of suspected medications
- Immediate medical evaluation for skin reactions
- Healthcare provider education programs

Outcome and Follow-up

Hospital Course

- **Day 1-3:** Acute management with drug discontinuation, IVIG therapy initiation, and supportive care
- **Day 4-7:** Stabilization phase with continued corticosteroid therapy and wound care
- **Day 8-14:** Recovery phase with gradual improvement in skin lesions and systemic symptoms
- **Day 15:** Discharge planning and transition to outpatient care

Discharge Condition

- **Skin Lesions:** 80% epithelialization achieved
- **Vital Signs:** Stable and within normal limits
- **Laboratory Parameters:** Normalized liver function tests, resolved leukocytosis
- **Respiratory Status:** Clear chest, normal oxygen saturation
- **Functional Status:** Independent activities of daily living

Follow-up Plan

Immediate Follow-up (1-2 weeks post-discharge)

- Dermatology assessment for wound healing progression
- Ophthalmology evaluation for ocular complications
- Primary care follow-up for medication management

Short-term Follow-up (1-3 months)

- Dermatology assessment every 2 weeks until complete healing

- Ophthalmology monthly assessment for 3 months
- Psychology/psychiatry referral for emotional support

Long-term Follow-up (6 months - 1 year)
- Annual dermatological examination for pigmentation changes
- Annual ophthalmological examination for late complications
- Periodic psychological assessment
- Drug allergy education reinforcement

Patient Education at Discharge
Medication Safety
- Strict avoidance of ciprofloxacin and aceclofenac
- Medical alert bracelet/card maintenance
- Informed consent process for future medications
- Family member education regarding drug allergies

Skin Care Instructions
- Gentle moisturizing routines
- Sun protection measures
- Signs of infection recognition
- When to seek immediate medical attention

Lifestyle Modifications
- Stress management techniques
- Adequate nutrition maintenance
- Regular follow-up appointment compliance
- Support group participation

Discussion
Clinical Significance
This case demonstrates the critical importance of early recognition and prompt management of drug-induced SJS/TEN. The combination of ciprofloxacin and aceclofenac.

Conflict of Interest: None

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