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Nursing Management of Patients with Disorders of the Immune System

Medical Surgical Nursing

Hypersensitivity reactions, autoimmune disorders, systemic lupus erythematosus, rheumatoid arthritis, immunodeficiency disorders, HIV/AIDS and organ transplantation.

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CHAPTER 15 / MEDICAL-SURGICAL NURSING 15. Nursing Management of Patients with Disorders of the Immune System

1. Immune response

Innate immunity includes barriers, phagocytes and complement; adaptive immunity involves antigen-specific B and T cells and memory. Immunological disease includes excessive response, loss of tolerance or insufficient defence.

2. Hypersensitivity classification

Type	Mechanism	Example
I	IgE-mediated mast cell activation	Anaphylaxis, allergic rhinitis
II	Antibody against cell/tissue targets	Autoimmune haemolysis
III	Immune complex deposition	Some lupus manifestations
IV	T-cell-mediated delayed reaction	Contact dermatitis, tuberculin reaction

Anaphylaxis

Definition and pathophysiology: Rapid systemic hypersensitivity with airway, breathing or circulatory compromise; skin findings may be absent.

Clinical features and investigations: Wheeze, stridor, hypotension, swelling, urticaria or GI symptoms after exposure.

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Management and nursing care: Call emergency team; IM adrenaline in anterolateral thigh is first-line according to protocol, position safely, oxygen and fluids as indicated. Antihistamines/steroids do not replace adrenaline. Observe recurrence risk and teach prevention.

Systemic lupus erythematosus (SLE)

Definition and pathophysiology: Multisystem autoimmune disease with immune-complex-mediated injury.

Clinical features and investigations: Fatigue, photosensitive rash, arthritis, nephritis, cytopenias; ANA, anti-dsDNA, complement, urinalysis and specialist criteria.

Management and nursing care: Hydroxychloroquine and individualized immunotherapy, monitor renal function,

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infection and medication toxicity; sun protection, pregnancy planning and flare education.

Rheumatoid arthritis

Definition and pathophysiology: Autoimmune synovitis with joint damage and systemic disease.

Clinical features and investigations: Symmetrical inflammatory arthritis, prolonged morning stiffness, fatigue; RF/anti-CCP and imaging.

Management and nursing care: DMARD therapy early, monitor CBC/liver/renal tests as indicated, infection screening and joint protection; support exercise and independence.

Immunodeficiency

Definition and pathophysiology: Primary inherited defects or secondary to HIV, malnutrition, malignancy, medications or other conditions.

Clinical features and investigations: Recurrent, severe or unusual infections; CBC, immunoglobulins, HIV and specialized tests.

Management and nursing care: Prompt infection evaluation, indicated prophylaxis/replacement and vaccination planning. Live vaccines may be contraindicated in significant immunosuppression; consult specialist.

3. Transplantation and immunosuppression

Organ transplantation replaces failing organ; matching and immunosuppression reduce rejection. Hyperacute, acute and chronic rejection differ in timing/mechanisms. Tacrolimus/ciclosporin, mycophenolate, corticosteroids and other agents have specific adverse effects. Monitor graft function, drug levels when indicated, BP, glucose, renal function, infection and malignancy risk. Never stop immunosuppression without transplant-team direction. Teach food/infection safety, adherence, vaccination review and urgent signs of rejection/infection.

4. Important Examination Questions

Long Answer Questions

1. 1. Describe hypersensitivity types and nursing management of anaphylaxis.

Short Answer Questions

1. 1. Explain SLE
2. 2. discuss immune deficiency
3. 3. list transplant nursing responsibilities.

Very Short Answer Questions (with answers)

1. 1. Which antibody mediates type I hypersensitivity? - IgE.
2. 2. First-line drug in anaphylaxis? - IM adrenaline.

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5. Quick Revision

- Anaphylaxis can occur without rash.
- Autoimmune disease is loss of self-tolerance.
- Immunosuppression requires infection and toxicity monitoring.

6. Conclusion

Anaphylaxis can occur without rash. Autoimmune disease is loss of self-tolerance. Immunosuppression requires infection and toxicity monitoring.

Practice questions

Choose one best answer. The answer key and explanations follow the questions.

1. Which hypersensitivity type is mediated by immune-complex deposition?

A. Type III
B. Type I
C. Type II
D. Type IV

2. Which infection pattern suggests immunodeficiency?

A. A single mild self-limiting cold
B. Recurrent, severe or unusual infections
C. One uncomplicated localized infection after minor skin trauma
D. A single brief gastroenteritis episode with full recovery

3. Which medication instruction is essential after organ transplantation?

A. Stop immunosuppression when the patient feels well
B. Omit immunosuppression whenever a routine blood test is normal
C. Do not stop immunosuppression without transplant-team direction
D. Double all immunosuppressants after any missed dose without advice

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Answer key and explanations

1. A - Type III

Type III hypersensitivity involves immune-complex deposition.

2. B - Recurrent, severe or unusual infections

Immunodeficiency can present with infections that are recurrent, severe or unusual.

3. C - Do not stop immunosuppression without transplant-team direction

Ongoing immunosuppression must be managed by the transplant team to protect the graft and monitor toxicity.

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