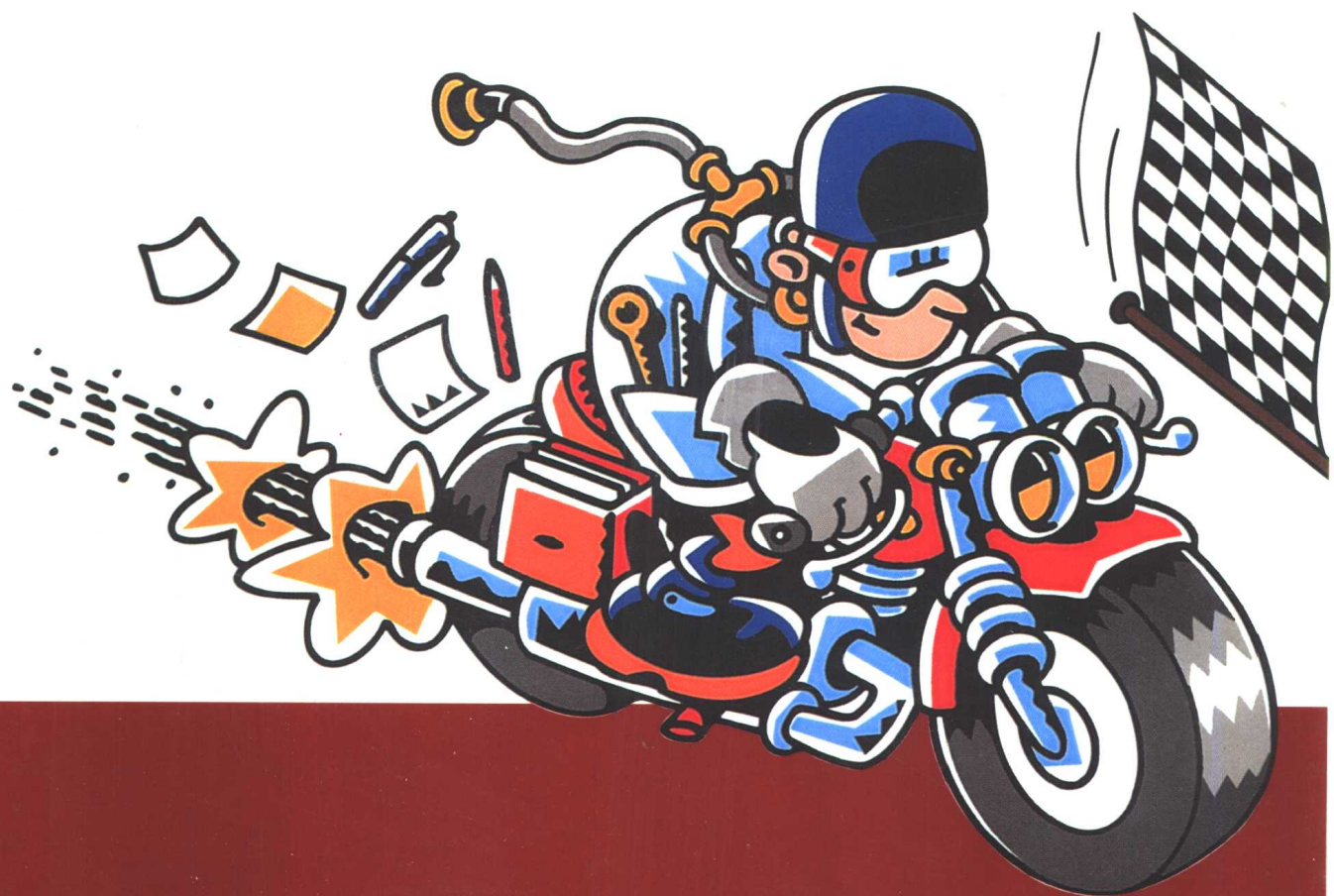


风暴式医学教程 *MOSBY'S CRASH COURSE* (原版英文医学教程)

儿 科 学

Paediatrics

Christine Budd ◉ Mark Gardiner
with Wilfred Yeo as Series Editor



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(原版英文医学教程)

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Christine Budd, Mark Gardiner: Mosby's Crash Course: Paediatrics

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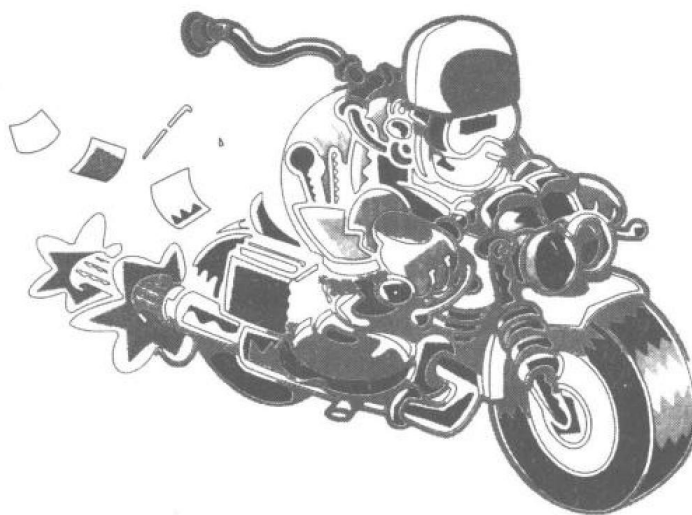
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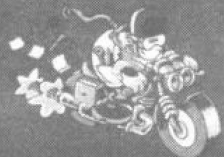
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Preface

The beginner in medicine faces a daunting task: how to identify and master in a few short weeks the essentials of subjects each of which would take more than one lifetime to master completely.

This short book is designed to make that task easier for students embarking on the study of paediatrics. We have asked ourselves: what should a newly qualified doctor know about the care of infants and children, both in health and illness? We hope that we have succeeded in focusing on what most teachers of undergraduates would regard as the absolute essentials and in being guided by the ethos of the new curriculum.

The format is in the style of this series, and is therefore rather different from a standard textbook. Part I provides a clinically oriented approach to the symptoms, signs, and problems with which an infant or child may present to their doctor. Part II sets out the basic skills of history taking and physical examination together with an overview of the special investigations used in paediatric practice. Part III considers the diseases and disorders of childhood in standard fashion, either by organ system or according to the subdivisions—such as the newborn—into which paediatrics divides. Important points are emphasised in Hints & Tips boxes, and key facts are presented in memorable form as tables and algorithms. Lastly, there is a self assessment section, including MCQs, case-based questions, and model short-answer questions designed to test core knowledge.

Of course, no clinical speciality can be learned from books alone. As Osler said 'To study medicine without the aid of books is to set sail without a chart. To study medicine only from books is never to go to sea at all'. Venturing on to the wards and into the clinics in total ignorance can be a bewildering and demoralising experience. This book is a chart to help the student on his or her first voyages in the fascinating and rewarding world of children and their illnesses. It is short enough to be read at the beginning of a paediatric attachment, and small enough to carry for easy referral. Good luck!

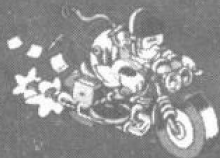
Christine Budd and Mark Gardiner

So you have an exam in medicine and you don't know where to start? The answer is easy—start with *Crash Course*. Medicine is fun to learn if you can bring it to life with patients who need their problems solving. Conventional medical textbooks are written back-to-front, starting with the diagnosis and then describing the disease. This is because medicine evolved by careful observations and descriptions of individual diseases for which, until this century, there was no treatment. Modern medicine is about problem solving, learning methods to find the right path through the differential diagnosis, and offering treatment promptly.

This series of books has been designed to help you solve common medical problems by starting with the patient and extracting the salient points in the history, examination, and investigations. Part II gives you essential information on the physical examination and investigations as seen through the eyes of practising doctors in their specialty. Once the diagnosis is made, you can refer to Part III to confirm that the diagnosis is correct and get advice regarding treatment.

Throughout the series we have included informative diagrams and hints and tips boxes to simplify your learning. The books are meant as revision tools, but are comprehensive, accurate and well balanced and should enable you to learn each subject well. To check that you did learn something from the book (rather than just flashing it in front of your eyes!), we have added a self-assessment section in the usual format of most medical exams—multiple-choice and short-answer questions (with answers), and case studies for self-directed learning. Good luck!

Wilf Yeo
Series Editor (Clinical)



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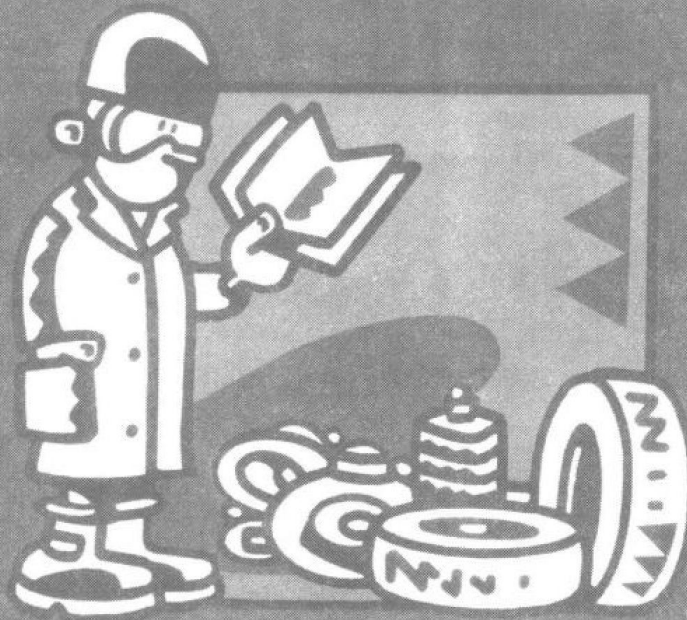
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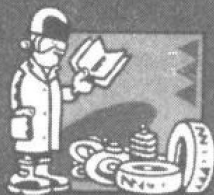


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1. Fever or Rash

FEVER

A fever is the most common presenting problem in paediatric practice and nearly all febrile illnesses in children are due to infection (Fig. 1.1). The challenge is to establish the causative agent (in particular, to distinguish between bacterial and viral diseases) and to identify the site of a localized infection (Fig. 1.2).

The diagnosis in a febrile child, or infant, may be apparent at a glance (e.g. if a characteristic rash is present) or may resist the most detailed investigation. In children between 6 months and 6 years, a convulsion may be the first manifestation of a febrile illness.

In a minority of children, especially those with protracted fever, a non-infectious cause may be present, e.g. autoimmune diseases such as juvenile chronic arthritis and systemic lupus erythematosus.

History

How long has the child been febrile?

A duration of more than a week or two suggests diseases such as TB, malaria, typhoid, and autoimmune non-infectious disorders.

Are there any localizing symptoms?

An infection in certain systems will advertise itself:

- Cough—suggests respiratory tract infection.
- Vomiting and diarrhoea—suggests gastrointestinal tract infection.
- A painful limp—suggests infection of the bones or joints.

Common causes of a fever	
Minor illnesses	Major illnesses
upper respiratory tract infections (coryza, otitis media, tonsillitis)	bacterial meningitis
viral exanthemata	urinary tract infection
gastroenteritis	pneumonia
	malaria

Fig. 1.1 Common causes of a fever.

In other sites, such as the urinary tract or the meninges (especially in babies), localizing clues may not emerge in the history.

Has there been recent foreign travel?

Malaria or typhoid may be overlooked if recent travel abroad is not declared.

Examination

Is the child systemically unwell?

Severe bacterial infection (especially if there is spread into the bloodstream) causes a 'septic state' characterized in its severe form by circulatory failure.

Is there a rash?

A rash involving the skin or mucous membranes may provide the diagnosis.

Are there local signs of infection?

Tonsillitis, otitis media, pneumonia, meningitis, and septic arthritis may all be revealed on examination (Fig. 1.2).

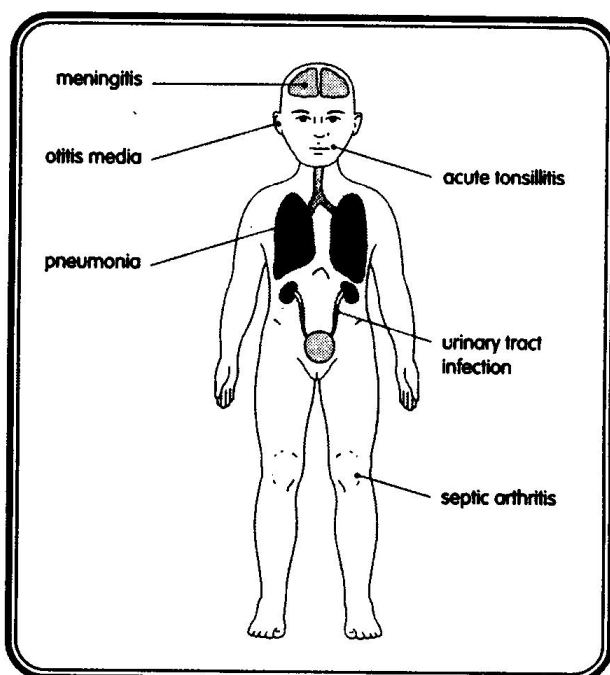


Fig. 1.2 Fever: important sites of local bacterial infection.



- Look for the purpuric rash of meningococcal septicaemia in all febrile children.
- Localization suggests bacterial infection.

Investigations

In a well child in whom a confident clinical diagnosis has been possible, no investigation is required. However, certain investigations are appropriate in any ill febrile child. These include:

- The full blood count (FBC)—an increase in the total circulating white blood cell count (WBC) indicates infection, and a predominance of neutrophils suggests bacterial infection. In a severe infection (e.g. meningitis, septicaemia) the total WBC may actually fall.
- Samples for microbiological examination (microscopy and culture)—these may include blood cultures, urine for microscopy and culture, throat swab, and cerebrospinal fluid.
- Imaging—a chest X-ray (CXR) should be taken if there is any suspicion of lower respiratory tract infection.
- A 'septic screen'—babies suspected of severe infection without localizing signs on examination are investigated with a standard battery of investigations before starting antibiotic therapy. These include: blood culture, FBC, lumbar puncture, urine sampling, and CXR.

Management

If an attempt is made to return the temperature to normal, the child feels better and the likelihood of complications such as febrile convulsions are reduced. This is done using antipyretics such as paracetamol. Ibuprofen may be used in children over 1 year.

Pyrexia of unknown origin (PUO)

The designation PUO should be reserved for a child with a documented protracted fever (more than 7 days) and no diagnosis despite initial investigation (Fig. 1.3). It is frequently misapplied to any child presenting with a fever of which the cause is not immediately obvious.

Causes of PUO	
Type	Cause
infections	malaria TB typhoid Kawasaki disease
non-infectious	juvenile chronic arthritis SLE
malignancy	leukaemia
fictitious	malingering child Munchausen by proxy

Fig. 1.3 Causes of pyrexia of unknown origin (PUO).

RASHES

A rash is a temporary eruption involving the skin. The history and examination often allow a clinical diagnosis without special investigations. Although an exact diagnosis is not always possible, or even necessary, on occasion it may be life-saving, as in the case of meningococcal septicaemia.

History

The history of a rash should ascertain the following:

- Duration, site of onset, evolution, and spread.
- Does it come and go (e.g. urticaria)?
- Does the rash 'itch' (e.g. eczema, scabies)?
- Has there been any recent drug ingestion or exposure to provocative agents (e.g. sunlight, food, allergens, detergents)?
- Are any other family members or contacts affected (e.g. viral exanthems, infestations)?
- Are there any other associated symptoms (e.g. sore throat, upper respiratory tract infection)?
- Is there any family history (e.g. atopy, psoriasis)?

Examination

Check for systemic features such as:

- Fever.
- Lymphadenopathy.
- Splenomegaly.

Describe the rash in 'dermatological language' observing the morphology, arrangement, and distribution of the lesions.



Morphology

Describe the shape, size, and colour of the lesions.

There may be:

- Macules, papules, or nodules.
- Vesicles, pustules, or bullae.
- Petechiae, purpura, or ecchymoses.

Most lesions are pink or erythematous.

Arrangement

Are they diffusely scattered, well circumscribed, or confluent?

Distribution

The distribution is important (Fig. 1.4). It can be local or generalized (flexor surfaces—eczema, or extensor surfaces—Henoch–Schönlein purpura (HSP) or psoriasis) or may involve mucous membranes (measles, Kawasaki disease, Stevens–Johnson syndrome).

Palpation

Feel the rash for scale, thickness, texture, and temperature.

Investigations

Investigations are rarely required but may include skin scrapings for fungi or scabies.

Causes of a rash

The main causative categories are shown in Fig. 1.5.

Diagnostic features of the more common generalized rashes.

The common generalized rashes are: maculopapular rash, vesicular rash, haemorrhagic rash, and urticarial rash.

Maculopapular rash

This is most likely a viral exanthem, but may be a drug-induced eruption. Common diagnostic features are:

- Measles—prodrome of fever, coryza, and cough. Just before the rash appears, Koplik's spots appear in the mouth. The rash tends to coalesce.
- Rubellā—discrete, pink macular rash starting on the scalp and face. Occipital and cervical lymphadenopathy may precede the rash.
- Roseola infantum—occurs in infants under 3 years. After 3 days of sustained fever, a pink morbilliform (measles-like) eruption appears as the temperature subsides. It is due to human herpesvirus 6 (HHV-6).
- Enteroviral infection—causes a generalized, pleomorphic rash and produces a mild fever.
- Glandular fever—symptoms include malaise, fever, and exudative tonsillitis. Lymphadenopathy and splenomegaly are commonly found.

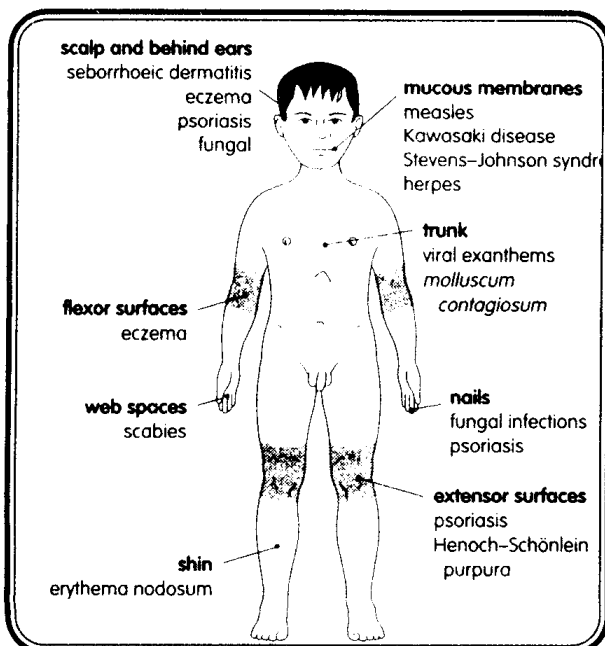


Fig. 1.4 Distribution of rashes.

Causes of a rash	
Type	Cause
infections	viral exanthems bacterial toxins
infestations	scabies
dermatitis	atopic dermatitis (eczema) seborrheic dermatitis
allergy	urticaria drug eruptions

Fig. 1.5 Causes of a rash.



- Kawasaki disease—causes a protracted fever, generalized rash, red lips, and conjunctival inflammation.
- Scarlet fever—causes fever and sore throat. The rash starts on the face and may include a 'strawberry' tongue.

Vesicular rash

Common causes of vesicular rash are:

- Chickenpox—successive crops of papulovesicles on an erythematous base which become encrusted. Lesions present at different stages. The mucous membranes are involved.
- Eczema herpeticum—exacerbation of eczema with vesicular spots caused by a herpes infection.

Haemorrhagic rash

Due to extravasated blood these lesions do *not* blanch on pressure. Lesions are classified by size:

- Petechiae (smallest).
- Purpura.
- Ecchymoses (largest).

Common diagnostic features are:

- Meningococcal septicaemia—petechial rash (may be preceded by maculopapular rash).
- Acute leukaemia—look for pallor and hepatosplenomegaly.
- Idiopathic thrombocytopenic purpura—the child looks well but may have bruising with, or without, nose bleeds.

- Henoch-Schönlein purpura—distribution is usually on the legs and buttocks. Arthralgia and abdominal pain may be present.

Urticarial rash

Urticaria (hives), a transient, itchy rash characterized by raised weals, appears rapidly and fades. It may recur.

Causes include:

- Food allergy—e.g. shellfish, eggs, cow's milk.
- Drug allergy—e.g. aspirin, penicillin.
- Infections—e.g. viral, urinary tract infections (UTIs).
- Contact allergy—e.g. plants, grasses, animal hair.

Two other distinctive rashes that occur in childhood and require special consideration are erythema multiforme and erythema nodosum.

Erythema multiforme

A distinctive, symmetrical rash characterized by annular target (iris) lesions and various other lesions including macules, papules, and bullae. The severe form is Stevens-Johnson syndrome. Causes include infections (most commonly: herpes simplex, *Mycoplasma*, or Epstein-Barr virus) and drugs (especially sulphonamides).

Erythema nodosum

Red, tender, nodular lesions usually occur on the shins. Important causes include streptococcal infections and TB.



2. Heart, Lung, or ENT Problems

HEART

Congenital heart malformations account for most cardiovascular disease in paediatric practice. Rare causes include rheumatic fever, viral myocarditis or pericarditis, arrhythmias, and Kawasaki disease.

Heart disease presents in a limited number of ways:

- An abnormality detected on prenatal ultrasound.
- A murmur noted on routine examination in an asymptomatic infant or child.
- Cyanosis.
- Cardiac failure with or without low cardiac output.

History

Cardiac symptoms may include:

- Poor feeding, cough, and difficulty breathing—cardiac failure in babies.
- Syncope—caused by arrhythmias and on rare occasions by severe aortic stenosis (AS).
- Headache—caused by hypertension due to coarctation of aorta (COA).

Examination

The major physical signs are:

- Cyanosis.
- Murmurs.
- Signs of cardiac failure.

Cyanosis

Several varieties of congenital heart disease may present with central cyanosis (a 'blue' baby) at, or soon after, birth. Central cyanosis is visible if the concentration of deoxygenated haemoglobin (Hb) in the blood exceeds 5 g/dL. Peripheral cyanosis—blueness of the hands and feet (due to a sluggish peripheral circulation) is a normal finding in babies who are cold, or crying, or unwell from some non-cardiac cause.

Central cyanosis due to congenital heart disease is distinguished from that due to respiratory disease by the failure of right radial artery pO_2 to rise above 15 kPa after breathing 100% O_2 for 10 minutes.

Causes

In most patients, there is an abnormality that allows a

portion of the systemic venous return to bypass the lungs and enter the systemic circulation directly (i.e. a right to left shunt).

Right to left shunts result from two general types of cardiac malformation:

- Lesions with abnormal mixing—desaturated systemic venous blood is mixed with oxygenated pulmonary venous blood so that the blood discharged into the systemic circulation is not fully saturated. Pulmonary vascularity is increased and pulmonary plethora is apparent on chest X-ray (CXR), e.g. transposition of the great arteries (TGA) (Fig. 2.1).
- Lesions with inadequate pulmonary blood flow—these infants often have right outflow tract obstruction and may depend on blood flowing to the lungs from left to right across a patent ductus arteriosus (PDA). Severe cyanosis develops when the duct closes, pulmonary vascularity is diminished and oligoemic lung fields are apparent on CXR, e.g. Fallot's tetralogy (Fig. 2.2).

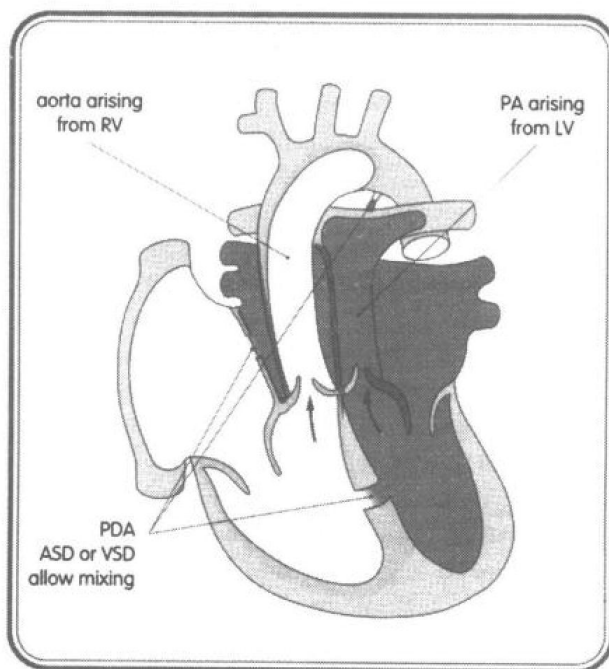


Fig. 2.1 Transposition of the great arteries. There has to be mixing between the two circulations to be compatible with life. As the foramen ovale and the ductus arteriosus begin to close, progressive cyanosis develops.

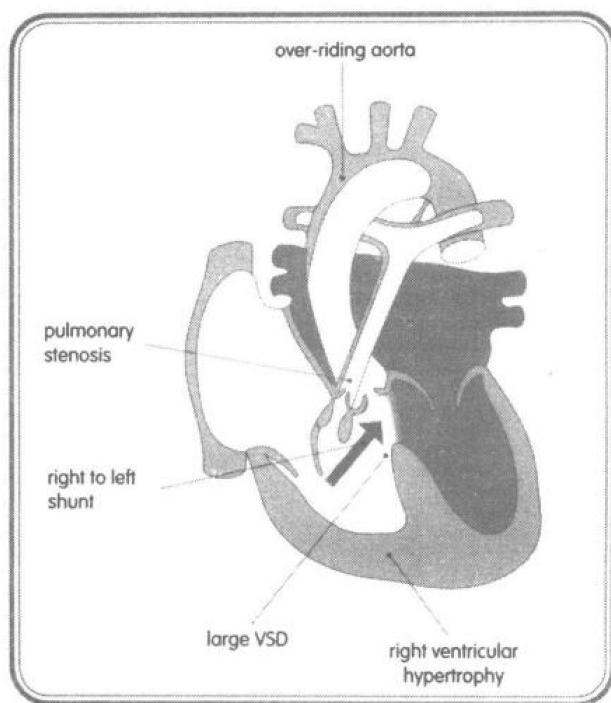


Fig. 2.2 Tetralogy of Fallot: the stenosis of the pulmonary valve causes resistance to flow and shunting of blood through the large ventricular septal defect.

Murmurs

A cardiac murmur discovered during an examination carried out either routinely or during an intercurrent illness represents a common problem. Many of these murmurs are innocent and do not reflect any underlying cardiac disease. Most haemodynamically significant cardiac lesions will present with cyanosis or cardiac failure. However, children with ventricular septal defects (VSDs) or pulmonary stenosis (PS) may be asymptomatic and discovered incidentally.

Evaluation of a murmur

A murmur is merely one component of the information obtained by examination of the cardiovascular system and cannot be interpreted in isolation.

Important features of a murmur include:

- The timing—is it systolic or diastolic? (Most murmurs in children are systolic; diastolic murmurs are rare and always pathological.)
- The character—is it pansystolic or ejection systolic?
- The loudness—grade out of 6. Loud murmurs may be palpable, called a 'thrill'.
- The radiation—a murmur that radiates from its site of maximal loudness is more likely to be significant.

Innocent murmurs

In most children with a murmur, the heart is normal and the murmur is innocent. Innocent murmurs are generated by turbulent flow in a structurally normal cardiovascular system (CVS).

There are two main varieties of innocent murmurs, the ejection murmurs and the venous hums.

The ejection murmurs are:

- Generated in the outflow tract of either side of the heart.
- Soft, blowing, systolic.
- Heard in the second or fourth left intercostal space.

The venous hums are:

- Generated in the head and neck veins.
- Continuous low-pitched rumble.
- Heard beneath the clavicle.
- Disappear on lying flat.

An innocent murmur is more likely to be noted during tachycardia, e.g. with fever, excitement, or exercise.

Significant murmurs

A murmur with any of the following features is significant:

- Symptoms—syncope, episodic cyanosis.
- CVS signs—abnormal pulses, heart sounds, blood pressure (BP), or cardiac impulse.
- Murmur—diastolic, associated with a thrill.

Significant murmurs, which may be difficult to distinguish from an innocent murmur, include those caused by PS and PDA. Refer for echocardiography if in doubt.

Cardiac failure

Cardiac failure is rarely seen in paediatric practice and is usually encountered in babies. The clinical features are different from those in adults, i.e. babies do not climb stairs or need extra pillows at night! Feeding is the only exertion they undertake and not being ambulant bipeds, at this time of life, their ankles do not swell up.

Clinical features

The symptoms and signs of cardiac failure are as follows (Fig. 2.3):

- Symptoms—the parents may notice poor feeding and breathlessness, excessive sweating, and recurrent chest infections. There may be failure to thrive.