that many doctors shy away from meetings at which they may think that they are not in control. But it is no defence always to argue the total primacy of clinical work. The job of a doctor comprises so much more. He is not cocooned and autonomous. He needs staff, equipment, buildings, and resources to do his job. He is dependent on the society in which he works, and if he wishes to influence it for what he believes to be the better care of his patients he must recognise the importance of meetings with others, so that his opinions can be heard and where he has a chance of persuading others to help him forward with his aspirations.

Informal administration is a matter of obtaining good working relations on the job. This demands care for the feelings and sensitivities of others and consideration. It needs sweet reasonableness allied with firmness so that jobs get done. Blustering and ordering are out of place, and only breed resentment, anger, and bloody mindedness so that the enterprise becomes inefficient and unpleasant for everyone.

Junior doctors must understand this. They tend to be birds of passage in a hospital. If they unnecessarily sow seeds of discord and dissension between themselves and nursing, laboratory, and other staff their bad reputation is quickly established and follows them everywhere. Consultant posts may be lost several years later when such behaviour in the past is brought up during the deliberations of an appointments committee. This is not to suggest that junior doctors should be doormats. Far from it. Junior doctors are an essential part of the team and have their rightful and honourable place in it. But they must not domineer and be offensive to others. It is possible to get cooperation and great help without this, though some have more difficulty in doing this than others. There are techniques for doing this that have to be learnt, and they depend on understanding and considering the needs of others in the team, just as clinical work depends on understanding the patients.

In the next article I shall discuss formal organisation in committees.

Aviation Medicine

Problems of altitude

II: Decompression sickness and other effects of pressure changes

RICHARD M HARDING, F JOHN MILLS

Decompression sickness (dysbarism)

As well as hypoxia and hyperventilation rapid ascent to altitude carries with it the threat of decompression sickness, another potentially fatal condition. Though the precise mechanism has never been unequivocally determined in man, almost certainly decompression sickness results from supersaturation of body tissues with nitrogen as ambient pressure falls, which leads to bubbles developing in the blood and tissues.[1] This supersaturation is due to the relatively poor solubility of nitrogen in the blood so that the rate of fall of the partial pressure of nitrogen in the tissues on ascent to altitude lags behind that of the absolute pressure. The tendency for bubbles to form is greater as the difference between the two pressures increases. Nuclei, such as vessel wall irregularities, are needed around which bubbles may form. Once established the bubbles grow in size and may be carried by the circulation to other parts of the body where they produce the various clinical manifestations of the illness.

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CLINICAL FEATURES

"*The bends*"—Joint pain is the most common symptom of altitude and indeed of compressed air (divers) decompression sickness; it is seen in about 74% of cases after exposure to 28 000 ft (8534 m) for two hours.[2] The pain is probably due to extravascular bubble formation around and within affected joints and usually develops in a single large joint—the knee, shoulder, elbow, or wrist, in that order of frequency. A mild ache, characteristically made worse by movement, progresses to a severe pain that radiates along the affected limb.

"*The creeps*"—Dermal manifestations are infrequently seen (about 7%) and are probably due to bubbles being carried to the skin from other sites. Formication and paraesthesiae may be accompanied by localised rashes, urticaria, and mottling.

"*The chokes*"—Though also infrequent (about 5%) respiratory symptoms are serious features which if untreated lead to collapse. They are probably due to a reflex response to the presence of bubbles within the pulmonary microcirculation. Feelings of chest constriction and retrosternal pain are associated with coughing, which may become paroxysmal, when an attempt is made to take a deep breath.

"*The staggers*"—Neurological manifestations are rare (about 1%) and result from gas bubble embolism within the central nervous system. They cover a variety of symptoms including anaesthesia, paralysis, and convulsions. Visual disturbances (about 2%) usually consist of blurred vision, scotoma, or hemianopia. In an appreciable number of cases (about 9%) the victim may develop malaise, anxiety, and a reduced level of

consciousness, either without other symptoms and signs (a primary collapse) or with them (a secondary collapse). The syndrome may progress to one of profound shock.

TREATMENT

Victims of aviation or subatmospheric decompression sickness require immediate recompression. Most recover immediately or very soon after descent to ground level and usually well before. The patient should be given 100% oxygen, if available, during the descent and kept warm and still. In addition, local pressure applied to an affected joint usually relieves the pain. Persistent and severe cases may need hyperbaric treatment after landing, and the ground services should be alerted to this possibility during descent. Occasionally the symptoms and signs may deteriorate after landing. Such a collapse usually follows exposure to altitudes greater than 28 000 ft (8534 m), during which severe symptoms of decompression may[2] or may not[3] have developed. The cause is probably widespread gas bubble embolism and, if coma follows the profound cardiovascular and neurological collapse recovery without treatment is rare.

PREDISPOSING FACTORS

Fortunately, subatmospheric decompression sickness is not common. It is unknown in healthy subjects at altitudes of less than 18 000 ft (5486 m) (but see below) and is rare between 18 000 ft (5486 m) and 25 000 ft (7620 m). Above 25 000 ft (7620 m) decompression sickness occurs with increasing frequency and severity as altitude increases.[2] Thus together with hypoxia and the problems of cold injury it is a distinct hazard after loss of cabin pressurisation at normal cruising altitudes. Decompression sickness rarely develops until at least five minutes —and more usually 20-60 minutes—have passed at altitude, by which time descent should have begun. Various factors may decrease tolerance to decompression sickness so that it may develop at altitudes below 18 000 ft (5486 m) and occasionally below 10 000 ft (3048 m). Thus ill health, drugs, alcohol, exercise, cold, and hypoxia all increase the possibility of decompression sickness, as do age (susceptibility is increased ninefold between 17-20 and 27-29 years), obesity (adipose tissue has a high content of dissolved nitrogen and a relatively poor blood supply), and previous exposure to decompression. Instances of the latter may occur after several unpressurised flights in rapid succession—for example, parachute training at high altitudes—or, more subtly, subaqua diving,[4] during which nitrogen is compressed into the tissues. Though some of this will evolve into gas during ascent (decompression) to the water's surface more nitrogen than usual will be present to form more gas bubbles if a further ascent to altitude is undertaken shortly afterwards. At present divers are advised not to fly for two hours after diving operations carried out with no stops and for 24 hours if dives are carried out with stops.[5] Recently, the advice of the medical advisory committee on diving has distinguished between diving with air/nitrox and with mixed gases.[6] More stringent regulations apply to aircrew who may have participated in sports diving. Finally, an as yet unexplained true individual susceptibility to decompression sickness does seem to occur.

Pressure changes in gas-containing cavities

Since the body is at a constant temperature any gas within closed or semiclosed cavities will obey Boyle's law on ascent to altitude. Thus, for example, any such gas will have doubled in volume—if it is free to do so—at an altitude of 18 000 ft (5486 m), where atmospheric pressure is half that at sea level. The lungs, the teeth, the gut, the middle ear, and the sinuses may all be affected.

PROBLEMS ON ASCENT

Expansion of gas in the lungs does not usually present a hazard since excess gas is easily vented by the trachea. The lungs are extremely unlikely to be damaged unless a rapid decompression of catastrophic magnitude occurs and the glottis is closed at the moment of decompression.

Pain in a tooth on ascent, aerodontalgia, may occur but is nowadays uncommon. Though its cause is disputed, it may arise when overt or covert dental disorders already exist, since the change in atmospheric pressure irritates the circulation in a diseased pulp. Alternatively, the relative increase in pressure within a closed air space beneath a dental filling or carious deposit may cause pain by a neural or vascular mechanism. Whatever the precise cause this condition is one reason why aircrew should receive regular dental inspections, since aerodontalgia does not occur in healthy or correctly restored teeth.[7]

Expansion of gas in the small intestine can cause severe pain and subsequent vasovagal syncope. This is unlikely to happen during a slow ascent to the low cabin altitudes in passenger aircraft but may occur during rapid decompression undertaken for training purposes. It may also follow rapid loss of cabin pressurisation at high altitude. In normal circumstances, however, aircraft passengers may notice slight abdominal distension, which may be enough to affect the well being of travellers with cardiovascular or respiratory disorders (see previous article, 16 April, p 1269). Gut expansion is aggravated by food and drink which produce gas—for example, beans, curries, brassicas, and alcohol. Gas in the stomach or large intestine does not cause problems as it can easily be released.

PROBLEMS ON DESCENT

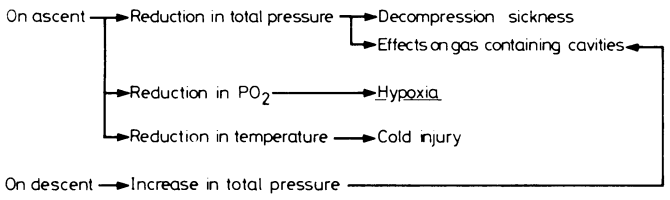
Expanding gas in the middle ear cavity vents through the eustachian tube on ascent and only rarely causes any discomfort in the ear drum—the ears merely "pop." Symptoms arise on descent because air cannot pass back up the tube. Pain, which begins as a feeling of increasing pressure on the tympanic membrane, quickly becomes severe and progressive unless the eustachian tube is able to open and so equalise pressure between the middle ear and the atmosphere. In most people this may be achieved by swallowing, by yawning, or by moving the lower jaw from side to side. Others have to perform a Valsalva or Frenzel manoeuvre. Unfortunately, the acute angle of entry of the eustachian tube into the pharynx predisposes to closure of the tube by the increasing pressure as descent continues. In babies and young children the angle of entry is less acute, and ear problems in flight are fewer. Upper respiratory tract infection, causing inflammation and oedema of the eustachian lining, increases the likelihood of otitic barotrauma. In severe cases the tympanic membrane ruptures, with consequent relief of pain. Aircrew are made fully aware of this condition during training; if they are unable to clear the ears—for example, during a cold—they are temporarily grounded. In doubtful cases a non-moving tympanic membrane may be detected by direct vision. Since atmospheric pressure swings are greatest at low altitudes (see previous article, 30 April, p 1408) passengers are often affected by tubal dysfunction. Education and instruction on the Valsalva and Frenzel manoeuvres help prevent much airborne misery. The treatment of otitic barotrauma, particularly if blood or fluid is present in the middle ear cavity, should include analgesia, a nasal decongestant, and a broad spectrum antibiotic.

The cause of sinus barotrauma is the same as its otitic counterpart. On ascent, expanding air vents easily from the sinuses through the ostia. On descent the ostia are readily occluded, especially if the subject has a cold. Characteristically a sudden very severe knife like pain occurs in the affected sinus and epistaxis may result from submucosal haemorrhage. The condition is related to the rate of descent and its prevention is part of the rationale behind the slow rates of descent of passenger aircraft. The possibility of a sinus problem cannot be predicted on the

ground, but clearly flying with a cold will increase the risk. Treatment should include a decongestant, analgesia, and a suitable antibiotic.

Conclusion

Modern air travel is not without hazards, and those described here are directly attributable to the physical changes in the atmosphere inherent in ascent to high altitudes (figure).



Physical changes in the atmosphere on ascent to altitude and their clinical effects.

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Communicable Diseases

Sexually transmitted disease surveillance 1981

Prepared by the Public Health Laboratory Service Communicable Disease Surveillance Centre and the Communicable Diseases (Scotland) Unit with the assistance of the Academic Department of Genitourinary Medicine, Middlesex Hospital Medical School.

This is the fourth annual surveillance report based on the available data on sexually transmitted disease in the United Kingdom.[1-3] As well as updating the statistics it includes a more detailed review of non-specific genital infection.

Trends in 1981

Total new attendances at clinics in the United Kingdom rose by 4·6% in 1981 compared with 1980, continuing the increase noted each year since the early 1950s. This is less than the previous annual increase of 9%, which, however, was unusually large. The overall picture of sexually transmitted disease in British clinics in the past 30 years is one of the increasing importance of new cases requiring treatment in categories other than syphilis or gonorrhoea. Syphilis and gonorrhoea now account for only 16% of total cases requiring treatment. In all other categories taken together there was from 1951 to 1981 an eightfold rise in the number of men attending the clinics and an 11-fold rise in the number of women, with the steepest rises observed from 1968 to 1973 and from 1979 to 1980.

The largest absolute increase in new attendances by diagnostic category in 1981, apart from "other conditions requiring treatment," was in non-specific genital infection (table); there were 132 391 new attendances, an increase of 6915 (5·5%) over those in 1980, but this was about half the previous annual rise of 11%. There were rises in most other diagnostic categories. In particular, the number of new attendances due to herpes simplex infection increased by 1300 (12·1%), those due to warts by 1700 (5·3%), and those due to candidiasis by 2894 (6%).

The numbers of cases of syphilis and gonorrhoea declined in 1981, the former by 5% and the latter by 4%, but laboratory reports of infections due to β-lactamase producing strains of *Neisseria gonorrhoeae* more than doubled, as they had done in 1980, with a total of 443 in 1981 compared with 211 the previous year and 104 in 1979. The proportion of these infections thought to have been contracted abroad fell from 52% in 1980 to 38% in 1981, so that for the first time the major cause of the increase in incidence was endemic transmission.[4] The numbers of cases of trichomoniasis, scabies, and treponemal disease apart from syphilis were fewer in 1981.

Sexually transmitted disease: reported new cases 1977-81 in the United Kingdom

Diagnosis	1977	1978	1979	1980	1981*
Syphilis	4 780	4 866	4 385	4 443	4 211
Gonorrhoea	65 963	63 569	61 616	60 850	58 301
Chancroid	49	57	49	65	100
Lymphogranuloma venereum	43	34	36	34	41
Granuloma inguinale	56	14	40	20	29
Non-specific genital infection	105 210	107 955	113 138	125 476	132 391
Trichomoniasis	22 145	21 732	21 222	22 285	21 625
Candidiasis	41 144	42 524	42 667	48 060	50 954
Scabies	2 562	2 589	2 391	2 599	2 434
Pubic lice	6 769	7 505	8 272	8 928	9 749
Herpes simplex	8 399	9 036	9 576	10 780	12 080
Warts	26 063	27 272	27 654	31 780	33 480
Molluscum contagiosum	1 019	1 026	1 030	1 228	1 305
Other treponemal disease	1 117	1 088	1 103	934	884
Other conditions requiring treatment	48 461	52 140	55 408	65 991	73 817
Other conditions not requiring treatment	104 539	108 596	109 050	117 070	121 918
Total new cases	438 319	450 003	457 637	500 543	523 319

*Provisional figures.