

Analgesics in Nursing

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Relief of pain is one of the great objectives in medicine. Drugs whose predominant action is pain relief are called analgesics. It is often the nurse's responsibility to select the most suitable analgesic from the range ordered by the physician or surgeon and certain factors must be taken into consideration by her when making her selection. First, analgesics will be of no avail until mental and physical discomforts, such as cold or wrinkled bedclothes, have been remedied. Secondly, the choice of analgesic is influenced by the patient's needs. After operations where pain is severe, but for a limited period, strong analgesics such as morphine or pethidine should be given without hesitation since in this instance the likelihood of addiction is rare. Where the condition is chronic or the patient has a progressive disease such as carcinoma, the weakest analgesic that is effective should be used first, so that there are stronger measures in reserve when they become necessary.

CLASSIFICATION

Analgesics can be classified into the following two broad types :

(I) Addictive Analgesics commonly referred to as narcotics. These drugs have both hypnotic and analgesic properties.

(II) Non-addictive Analgesics.

DESCRIPTION

1. Narcotic Group

(a) Morphine

Morphine is still the supreme remedy for the relief of pain. It is the standard against which potent analgesics are judged. Morphine acts on the central nervous system, depressing the important centres and has a special effect on the sensory nerve cells, which explains its value in the relief of pain.

PHARMACOLOGY

Action on the higher centres

In some persons there is at first a period of well-being or excitement after its administration. This is soon followed by a general dulling of perception so that the patient assumes a drowsy state with diminished power of attention. Whilst this is going on, the sensory centres are depressed and the appreciation of pain and discomfort are markedly diminished. Movements tend to become clumsy and the patient passes into a sleep from which, however, he can be easily roused but which returns when he is left undisturbed.

Action on the Medulla

The respiratory centre is depressed so that respiration becomes slower and shallower. This is a prominent action of morphine. The cough reflex centre is depressed and this makes opium and morphine of value in relieving irritating and useless cough. The vomiting centre is affected in some persons. Small doses of morphine appear to stimulate the centre so that the patient vomits. In larger doses, the centre is depressed by morphine. The vasomotor centre is depressed but to a relatively less extent than the respiratory centre. The pupils are contracted.

Action on the Alimentary System

Morphine slows down peristalsis so that constipation results. Advantage is taken of this constipating effect in the treatment of some cases of diarrhoea.

Morphine Poisoning

Sleep develops into coma from which it is very difficult to rouse the patient. Reflexes are lost. The depression of respiratory centre is so marked that the rate of breathing may be slowed to less than 12 per minute. The contracted pupil becomes pinpoint in size. The pulse is weak.

Side-effects of Morphine

Children do not tolerate morphine or opium well and doses very small in proportion to the age should be given. This is specially important in infants. Vomiting and constipation, drug addiction and depression of respiratory centre are the other side-effects. Morphine should never be used in the treatment of an acute asthmatic attack.

The usual dose of morphine is 8-20 mg. by hypodermic injection.

Preparations of Opium

Ipecacuanha and opium powder (Pulvis ipecacuanhae et opii-Dover's Powder), 300-600 mg. (5 to 10 grains).

Tincture of opium (Tinctura opii-laudanum 0.3 ml.-2 ml. (5 to 30 minims).

Gall and opium ointment (Unguentum gallae cum opio), used in the treatment of haemorrhoids.

Preparations of Morphine

Morphine sulphate injection (B. P.), 8 to 20 mg. (1/8 to 1/3 grain).

Ampoules containing 10 mg. (1/6 gr.), 15 mg. (1/4 gr.), 20 mg. (1/3 gr.) and 30 mg. (1/2 gr.) are available.

Morphine and atropine injection (B. P. C.). Ampoules of 1 ml. contain 10 mg. (1/6 gr.) of morphine and atropine 0.6 mg. (1/100 gr.)

Morphine and hyoscine injection. Ampoules of 1 ml. contain morphine 10 mg. (1/6 gr.) and hyoscine 0.4 mg. (1/150 gr.) approx.

Solution of morphine hydrochloride 1 per cent (Liquor morphine hydrochloride), 0.3 to 2 ml. (5 to 30 minims).

Morphine is generally given by hypodermic injection, but can be given by mouth.

(b) Drugs resembling Morphine

(i) Pethidine

Pethidine is a less potent analgesic than morphine but has the advantage of lesser liability to addiction than morphine. Pethidine relieves visceral pain more effectively than the pain in skeletal muscles. Hence, Pethidine is more effective in renal and biliary colic. Pethidine is also used in obstetrics analgesia and as a premedication along with intravenous or inhalation anaesthesia. The dose is 25-100 mg. either by mouth or subcutaneous injection. The intravenous dose is 25-50 mg.

(ii) Diamorphine Hydrochloride (Heroin)

This is a drug having a similar action to morphine. It has about five times as much analgesic potency as morphine. It is more depressant to the respiratory centre than morphine. It is even more likely to produce addiction than morphine. It should be reserved for relief of pain and restlessness in the terminal stages of fatal diseases like cancer.

(iii) Codeine

Codeine is a mild analgesic having about one-sixth of the potency of morphine. Codeine can be used for any moderately severe pain but is particularly useful in dysmenorrhoea and orthopaedic pain. Constipation and nausea are troublesome side-effects arising from full doses of Codeine. The recommended dose is 10-60 mg.

II-NON-ADDICTIVE ANALGESIC

a) Microfined Aspirin

According to Dr. H. Wykeham Balme, M. D., F. R. C. P., Physician, St. Bartholomew's Hospital, "Aspirin remains the first choice of analgesic drugs. In dosages of 4 gm. or more a day its anti-inflammatory effect becomes worthwhile, especially in some of the more acute cases of arthritis. Mixtures of aspirin with other drugs are unwise, and it is best to use it alone so that really high dosages can be achieved."

PHARMACOLOGY

Aspirin has 3 important therapeutic actions: analgesic, antipyretic and anti-inflammatory.

Analgesic Action

Acetylsalicylic acid is the most effective safe analgesic available, and it acts rapidly. The U.S. Govern-

ment, through the Federal Drug Authority, recently sponsored careful and elaborate hospital tests in order to decide which of the best-known analgesic remedies was the most effective. The trials clearly showed that no formula was better than that of 'ASPRO' both in terms of speed, effectiveness and safety and that the minimum risk of gastric upset was incurred.

The actual mechanism of the pain-relieving action of acetylsalicylic acid is complex and only partly understood, but it appears that pain is, in some instances, characterized by excess fluid in certain tissues, and acetylsalicylic acid acts by drawing into the blood-vessels the fluid collected in those tissues. The pain threshold tests have given conflicting evidence about the analgesic action of acetylsalicylic acid and it is suggested that the only true test is in its ability to relieve 'natural' pain (H.K. Beccher). The analgesic action of 'ASPRO' begins very soon after it is taken and is sustained for about 2 hours or longer.

Antipyretic Action

Aspirin lowers body temperature. The antipyretic action is usually rapid and effective in patients with high temperature, but is rarely demonstrable when the temperature is normal. The antipyretic action of ASPRO is brought about by increased heat loss as a result of increased peripheral blood flow and sweating.

Anti-inflammatory Action

Aspirin relieves the pain of rheumatism and also reduces the swelling and the stiffness of the joints. Phenacetin and paracetamol do not possess this action to any appreciable extent. The action of aspirin thus reduces inflammation and pain, but not the actual cause of rheumatic diseases.

Recently, Dr. L. Goldstein, a Research Scientist of New Jersey Neuropsychiatric Institute, U. S. A., reported that aspirin seems to have anxiety-relieving properties. In his experiments, Dr. Goldstein showed that 975 mg. of aspirin produced the same effect as an average dose of meprobamate, a commonly used tranquillizer.

FINE PARTICLE THERAPY

The importance of particle size in relation to therapeutic efficacy was first recognised by Goodhue and Siegler in 1939. The finer the particle size the faster is the absorption of the drug, and greater its initial concentration in the blood stream. This led our research workers to reduce drastically the particle size of the aspirin in our ASPRO and thus the Microfined ASPRO was born. The word Microfined was coined to describe the main feature of the new ASPRO extremely fine powdering of the main therapeutic ingredient aspirin.

In Microfined Aspro, aspirin has been milled to make a superior powder 30 times finer than the former one. It is so fine that about 150 million particles of the main ingredient go into a single tablet.

The important therapeutic feature of Microfined Aspro is that it readily dissolves in the stomach and

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