

LECTURE 1

30.7.14

Introduction & Overview

BIG QUESTIONS

Where did some major drugs in current use come from?

How do we make new drugs today?

How do new drugs "change the world"?

- e.g. alter medical practice
- produce social change

LECTURE 2

31.7.14

Health and Medicine before the age of Science

-scientific method in medicine

-broad general understanding of the development of drug-based medical therapy in major world civilisations

-think critically about how hard it is to change existing ideas and received wisdom

PREHISTORIC MEDICINE & PHARMACOLOGY

little information and evidence

almost no forms of modern-day 'traditional medicine' can be authoritatively linked to prehistoric practice

diverse cultures all developed their own healing methods, including drug therapy

these ways of healing were based on widely-differing beliefs and practices

since the 19th century there has been a strong drive within modern medicine to associate itself with antiquity (comforting)

this manifests itself today in some forms of 'complementary' therapies - to give themselves current validation

as modern Westerners, we believe that 'antiquity' guarantees reliability in medicine and health

physical/archaeological evidence showing mechanical interference with the human body does not necessarily indicate medicine as we know it

people have historically done all kinds of things to their bodies - and other peoples' in the name of beauty, religion, commerce, politics

'medicine' as we understand it is modern construct, based on scientific method (organised efforts to come up with explanations of nature, always modifying and correcting through systematic observations)

healing practices belonging to prescientific era are not based on the scientific method

only the broadest generalisations are possible about early civilisations and medical practice

ANCIENT EGYPT (c.3000 - 300 BC)

Imhotep - earliest medical tradition relates to him

confirmed by 2 carvings

later became a god

supposed to have left a body of writings (has his name on it)

Edwin Smith papyrus - 1700 BC (may have been a copy of something from much earlier; authorship not proven)

describes mostly surgical

Ebers Papyrus - contains herbal and magical remedies for common complaints

74 prescriptions for cosmetics, contraceptions, cleaning productions, spells

MOST MEDICAL TREATMENTS ARE BASED ON PURGING - BODY CONTAINS TOXINS THAT CAUSE ILLNESS WHICH NEED TO BE EXPELLED FROM THE BODY

Shamanism

ancient Egyptian medicine fits the pattern of shamanism
common practice globally
combined role of spiritual and physical healer
bridge between spirit world and physical world
could be male or female

FERTILE CRESCENT CULTURE AND MEDICAL KNOWLEDGE

large collection of clay tablets include many medical codices
diseases are often blamed on pre-existing spirits
rivers has medical/cultic powers to wash away evil and disease
two types of healers '**ashipu**' who diagnosed illness by determine the god or spirit at fault, or person themselves
'**asu**' dealt in herbal remedies (washing, plastering etc.)

ANCIENT DRUGS

drugs were compounded from plants, resins and minerals
constant use of honey as wound dressings
identify ancient drugs is fraught with difficulty
 some drugs has poetic or allegorical names (could be actual lion's fat, or that could be the name of the plant)
some plants have been identified; liquorice, opium and myrrh

AEGEAN

Hippocrates of Cos - is not the 'father of modern medicine'
 we know very little about him
 Plato mentions him (was known)
 don't know who wrote his supposed text

Cos - uncover general laws of health and illness that applied to all people - **developed theories but did not validate by testing**

Cnidos - prioritised individual case studies: called for strict empirically-derived laws (evidence based)
 each individual ought to be seen as an individual

Cos given line honours by 19th and 20th century historians of medicine (now venerated but this is largely myth)

HIPPOCRATES AND HIS LEGACY

systematic disease duration
basic clinical observation

Hippocrates approach may have held back the development of scientific method

SCIENCE IS not the same as technology

science is a method consisting of organised efforts to come up with explanations of nature, always modifying and correcting these through systematic observations
organisation, explanation and observations are not enough
 ancient technical innovations are not science
 ancient speculations are not true theory
 for these to be science, must be tested

HUMORAL THEORY

most prominent theory of the Coan school of medicine
illness was caused by imbalance in the four bodily humors
matches the four elements that made up the universe
and the four elements (hot, dry, wet, cold)

theories became more important than observations

meant that practice and observation became separated and eventually condemned as 'empiricism'

Ayurvedic tradition - India, Sri Lanka

based on writings dating from c.300s BC

similarities to humoral theory; five basic elements and up to 20 qualities

Chinese medicine

illness resulted from circulating

based on similar matrix to humoral theory

herbal based intervention to correct imbalances

acupuncture

ROMAN MEDICINE AND DRUG THEORY

Pedanius Dioscorides (40-90 AD)

De Materia Medica first authoritative western medicine

may have based on observations of plant/drug use

difficult to identify plants and quantities

KONEION - could be hemlock

Galen OF Pergamon

of 500 treatises attributed to him

very influence by Hippocratic approach and humoral theory

famous for carefully noting exact measurements of drugs

theriac - mystery substance with 64 ingredients that could cure anything

ISLAM AND CLASSICAL LEARNING

islamic world preserved Greek manuscripts from decline of Rome to early 1200 AD

heavily influenced by classical ideas of medicine and herbalism

Al Rhazi - introduced mercury-based compounds

Ibn Sina - book contains 700 drugs preparations

GOLDEN AGE OF ISLAMIC

rejected use of human reason to reach for truth; identified revelation/mysticism as only true path of knowledge

halt of scientific development

EARLY MEDIAL EUROPE

first medical school in Italy

grew out of a monastic pharmacy

Paracelsus (1493-1541 AD)

challenged the unquestioned theory-based approach to medicine

devoted mineralogist and toxicologist

use of mercury to treat syphilis

also believed in humors, alchemy, occult

PHARMACY AND THE RISE OF SCIENCE

began to flourish 1200s in Western Europe (very crude)

underwent refinements in the Renaissance and early modern period (more reliable results)

1700s -science of botany fuelled by new experimentation (age of exploration)

folk remedies scrutinised more closely - *digitalis* first effective heart drug

Humoral theory continued to persist

now known as plethora or fulness theory

overloaded with blood or other products (bloodletting, leeches, drastic laxatives, hydrotherapy, blistering (to draw fluid to skin))