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1] QUEST OF IMMORTALITY,

DOES AGEING MATTERS?

**EDITOR, DR JANARDAN V BHATT,EDITOR, PROF. AND HEAD PHYSIOLOGY, AMC MET MEDICAL
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Human beings have always hungered for immortality .Would you like to die or live on even as time stretches to its ultimate limit. Mortal stars collapse to their nebulous cores. .

It reminds of the Greek mystic story of [Tithonus](#). The poor chap fell in [love](#) with the goddess of dawn who asked Zeus to grant [immortality](#) to her lover. However, she forgot to ask for eternal youth. Therefore, while the goddess basked in the glory of her beauty each dawn, time caught up with her immortal lover. Tithonus now had an eternity to face in a body shriveled, hunched, sick—yet undying. Is this type of immortality you want? Immortality is of what value if the body is full of diseases and aged. IT IS CURSE THAN BOON.

Consider this example. Cancer cells have somehow superseded nature's code of aging and suicide. These cells can be kept alive and dividing in the lab until the edge of eternity. In fact, a few cells obtained from Baltimore-based Henrietta Lacks, who died of cancer in 1951, have now gone up to billions, and are alive in laboratories around the world, still dividing profusely. A curious kind of immortality!

However, none of us would appreciate eternal [life](#) as a tumor.

Statistically IMMORTALITY is possible. If we can raise its average [life](#) span from 25 years in the medieval times to 64 years today, there is no reason why we cannot extend it indefinitely. The cells of our body are programmed for collective suicide. The internal suicide genetic program is triggered off after a certain age [biological clock theory] and our system begins to age. According to a study conducted by [Rudi Westendorp](#) of the Netherlands and Thomas Kirkwood of the University of Manchester, women who postpone their pregnancy are likely to live longer. Even those who have fewer children or none at all make better candidates for longevity. If it you do not believe this, consider this: the adrenal glands of the Pacific salmon release a massive amount of corticoid hormones into the bloodstream just after they spawn. This ages them immediately: they wither and die. The octopus glands are not even that considerate. The eight-limbed mollusk gets its hormone overdose immediately after mating. However, if you restrict their amorous instincts, both species live longer. If a species wants to procreate and evolve, it has to die faster—to make way for future generations. Think other way. In a research conducted at the University of Colorado, scientists modified a specific gene, [Age-1](#), that was responsible for aging a roundworm. The roundworm's [life](#) span increased by 70 per cent—and its fertility dropped by 80 per cent. Even male fruit flies that mated with more females had a shorter [life](#) span. Cancer cells can be kept alive and dividing in the lab until the edge of eternity. In fact, a few cells obtained from Baltimore-based Henrietta Lacks, who died of cancer in 1951, the cancer cells have now gone up to billions and are kept alive in laboratories and still dividing profusely. It is immortality! However, since none of us would appreciate eternal [life](#) as a tumor.

Ancient Egyptian recipes for rejuvenation with pastes of semiprecious stones ([Smith Papyrus](#), 2900 B.C.) to medieval alchemic concoctions of gold, withered flesh of mummies, viper meat and children's blood—the seekers of eternal [life](#) tried it all. In ancient Rome, doddering old people would suck the blood of dying gladiators, believing it would prolong their own life. Indians, in their own mystical way, sought [immortality](#) through a mythical herb, soma the soma Rasa. *Susruta Samhita*, the ancient Ayurvedic treatise, gives detailed instructions on how to use soma for *kaya kalpa* (rejuvenation): *kaya kalpa* is followed by a description of how the body cleans itself of impurities. Next comes a falling of hair, nails, and skin, giving way to new skin and organs, each fresh and totally rejuvenated. The *Susruta Samhita* states: "Such a person bears a charmed [life](#) against fire, water, poison, and weapons, and develops great muscular energy", which enable him to "witness ten thousand summers on earth in the full enjoyment of a new and youthful body." However, the soma plants are "invisible.

At the age of 72-year-prof. Edouard Brown-Sequard, a professor at Harvard, [yes, Brown-Sequard syndrome] claimed that he had regained his youth and virility after injecting himself with the crushed testicles of a dog.

Spirituality also claims to prolong life. The [transcendental meditation](#) (TM) of Maharishi Mahesh Yogi is said to aid longevity. Maharishi's organization claims that people practicing TM have a lower biological age. In ancient China, attainment of longevity—and immortality—was the goal of Taoism.

Psychology and behavior science also try to help. The belief that [death](#) is inevitable has probably killed more people than all other causes combined”, we die when our [death](#) urge becomes stronger than our [life](#) urge.

In addition, the secret for eternal [life](#) is

Just to desire to live—

Moreover, to have a reason to live as Norman cousin said.

Research indicates that [life](#) forms living in colder climates usually have a higher [life](#) span. In fact, if certain kinds of fish are transferred to a colder climate, they not only live twice their normal [life](#) span, but also grow bigger and stronger. In fact, various yogic techniques such as hatha [yoga](#) are believed to lower the internal body temperature. It was this basic contradiction of the assumed laws of science that led Walford to visit India. He scientifically tested some yogis near the foothills of the Himalayas. The yogis could easily lower their internal body temperature by 4°-5°. Could there be a possible secret of longevity here?

Cloning and eternity: Even upon enough argument in favor of human stem cell research, cloning is banned .Today the cloning is reality .But question remain are you happy with your body dye and your clone survive? So again, we have to think more realistic about ageing and how to prolong ageing and maintain youthful life. So now, the question is seeking life rather than eternity .Why not to consider those theories, which help to postpone ageing and help to maintain youthful life. One thing about all theories of aging is common and i.e. it is cell which age first .Average Cells contain two type of DNA i.e. mitochondrial DNA and nuclear DNA .According to free radical theory, DNA are damaged by free radicals. There are enough evidences to believe in the theory .Free radicals are constantly produced by

- 1] mitochondrial electron transport,
- 2] peroxisomal fatty acid,
- 3] cytochrome P-450,
- 4]phagocytic cells.

There is natural anti oxidants enzyme system in our body to combat these free radicals. They are

- SOD,
- catalase,
- glutathione peroxidase, and
- glutathione reductase.

- Excess of oxidative stress damages not only DNAs and RNAs but also other cellular macro and micro molecules i.e. cell membrane, lipids [peroxydation] ,proteins [Amino acids],...Such damage are the starter point of cell aging. And large number of experimental evidences in fly to rhesus monkey suggest that low calorie diet prolong the life span .And the mechanism is that such low calorie diet is associated with decrease production of free radicals. In this context it worth to note that role SUPPLEMENTARY artificial anti oxidants in pharmacological doses is remained controversial. Food sources rich with anti oxidants i.e. Phyto chemicals and Polyphenolic Compounds are beneficial to postpone aging and degenerative changes. Such food include i.e.

- Fruits,
- vegetables, nuts,
- blue-green
- algae,
- Green tea
- Cucumber
- spirulina

In addition, are found beneficial to postpone ageing process.

- If we accept that our genes are blue print of our life [genetic clock theory] than aging and survival are also expression of genes. Moreover, nothing can be done until we can go in to the cell nucleus and manipulate genetic clock. But DNA damage and mutation [one more theory] are influenced
 - by diet,
 - lifestyle,
 - toxins,
 - pollution,
 - radiation and
 - unknown outside influences.
 - We have the ability to accelerate DNA damage or slow it down.

- Recently the telomerase theory has raised a good hope due to encouraging results in experimental animals. Telomere is part of the chromosome that shorten every time a cell divides .Ultimately there is no telomerase resulting inability of the cell to duplicate a starting point of aging process. The enzyme *telomerase* appears to repair and replace telomeres. This enzyme found in germ and cancer cells and has therapeutic potential for prolonging aging process.

Glucose in our body combines with proteins and amino acids, producing glycosylation. In addition, glycosylation products, especially with collagen and elastic tissue, damages the body making corner stone of aging process [Cross-Linking Theory of Aging](#). In this context, Diabetes mellitus is considered as accelerated state of ageing process. By reducing the glycosylation products calorie restriction help to postpone aging if not completely stopping.

Role of hypothalamus has attracted the attention of scientists in context to Neuro endocrine theory. As age advances hypothalamus loses receptors sensitivity and so the regulatory ability. The endocrine secretion of hypothalamus declines and endocrine effectiveness is also reduced due to the receptors downgrading. Cortisol hormones that increase with age damage the hypothalamus. This damage could then lead to further hormonal imbalance as the hypothalamus loses its ability to control the system. This theory poses potential role of use of cortisol *adjusters and* receptor desensitizers as anti aging strategy .But as stress and cortisol production are interlinked , role of control the stress by adequate stress management may further help by reducing cortisol induced damage to hypothalamus and help to slow down aging process.

Lastly, we consider rate living theory, which suggest which suggest slow down the rate of cell division if one wants to live long lives. Cell division can be slowed down by diet etc., other anti aging strategies described above. Here worth to remember role of yoga and meditation .In essence of yoga is to slow down by pranayam and dhyana i.e. by control of breathing and meditation. Further

researches are required to determine whether control of breath and meditation slow down the cell division or not.

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2] A STUDY OF SERO-CONVERSION AFTER IMMUNIZATION WITH HEPATITIS B VACCINE.

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Abstract:

Inadequate immune response to hepatitis B vaccine has been reported. Various factors may be responsible for it. Three doses are recommended for complete vaccination. A booster dose may improve immune status. Present study was conducted to assess immune status of different vaccinated persons by measuring anti HBsAg titer. **Observation:** Amongst the persons who received 3 doses of vaccines, 12.5 % were non-responders with titer below 10 IU / L, 22.2% were poor responders and having antibody titer 10 – 100 IU / L. While 65.3 % were good responders with titer more than 100 IU / L. All the individuals who received booster dose were good responders with anti HBsAg titer more than 100 IU / L.

Key words:

Hepatitis B Vaccine, Anti HBsAg titer, Responders

Introduction

Viral Hepatitis B is a leading cause of acute and chronic liver disease worldwide, including cirrhosis and hepatocellular carcinoma. Safe and effective vaccines have been available since the early 1980s, offering the opportunity to exert substantial prevention and control of the disease on a global scale.

A substantial reduction of newly acquired infections of hepatitis B, carrier rate, and hepatitis B related mortality has been reported in countries where universal vaccination has been implemented.

Non-seroconversion after Hepatitis B immunization has been reported. 5-10 % of healthy people may fail to respond to the proven immunogenic vaccines.⁽¹⁾ Non-responsiveness may be attributed by several factors including site of injection, age, smoking, immunosuppression & immunogenic make up.⁽¹⁾

Issue of inadequate immune response following Hepatitis B vaccination needs to be given a serious consideration and studies needed to assess long term protection after vaccination, various factors affecting immunogenicity of vaccines & possible need for booster dose of vaccine.

The present study was aimed to find out status of seroconversion after immunization with Hepatitis B vaccines in different group of individuals in relation to age, sex, booster dose & duration after last dose of vaccine.

Material and method:

Blood sample were collected from 84 randomly selected persons immunized against Hepatitis B. Informed consent was taken from the persons and from parents (in case of children). Relevant history of study group was taken. The serum was separated from the samples and samples were stored at -20°C .

Enzyme immunoassay for qualitative determination of HBsAg was performed on all the samples. The results were interpreted as positive or negative.

ELISA for quantitative determination of Anti HbsAg antibody titre was also performed on all the serum samples.

Kits used were -

For HbsAg : Tulip Diagnostic

For Anti HBsAg: Anti HBs ENZYME IMMUNOASSAY KIT - DiaSorin

Results:

Table 1 : Distribution of Anti HBsAg titer & their relation to number of doses.

Doses	No.	0	0 – 10	10 - 100	100 - 1000	>1000
Two	3	1	0	1	1	0

Three	72	5	4	16	34	13
Four	9	0	0	0	4	5

Table 2: Sex wise distribution of Anti HBsAg titer

	Total	Anti HBsAg titer (IU / L)					Protective	Percentage
		0	0 – 10	10 - 100	100-1000	>1000		
Male	61	3	3	12	27	16	55	90.1
Female	23	3	1	4	12	3	19	82.6

Table 3: Distribution of Anti HBsAg titer amongst different age groups

Age (years)	Total	Anti HBsAg titer (IU / L)					Protective	Percentage
		0	0 – 10	10 – 100	100 - 1000	>1000		
<1	4	1		2	1		3	75

1 to 10	7	1	1	1	3	1	5	71.4
10 to 20	9	2	0	3	3	1	7	77.8
20 to 30	54	1	3	8	28	14	50	92.6
>30	10	1	0	2	4	3	9	90

Table 4 : Relationship between titer and duration of last dose of Hepatitis B vaccination

		Anti HBsAg Titer (IU / L)						
		00-10	10-100	100-1000	>1000			
Duration								
2	1	1	0	0	0	0	0	0
3	3	0	0	0	2	1	3	100
3 to 36	31	0	1	5	17	8	30	96.8
>36	37	4	3	11	15	4	30	81.1

Table 5: Distribution of different type of responders who have received 3 doses (Total 72)

	Non responders		Poor responders (booster dose required)	Responder (booster dose required)	Responders & Fully protected	
	0	0 - 10	10 – 100	100- 500	500- 1000	>1000
Anti HBsAg titer (IU / L)	0	0 - 10	10 – 100	100- 500	500- 1000	>1000
No.	5	4	16	26	8	13
Percentage	6.9	5.6	22.2	36.1	11.1	18.1
No.	9		16	47		
Percentage	12.5		22.2	65.3		

Figure 1: Comparison of present study with study by S.Kuhail et al1996 ⁽¹¹⁾

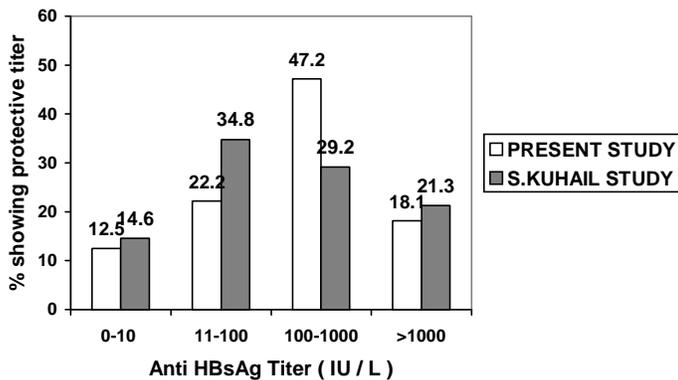
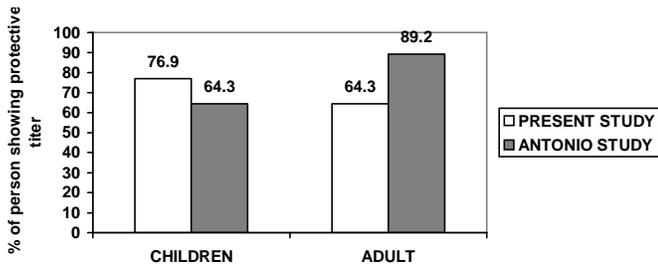


Figure 2: Comparison of present study with Study by Antonio Parlato et al (2)



Discussion:

A 10 IU/L concentration of anti HBsAg antibody is the clinically recognized immunity threshold (minimal protective level) in accordance with the recommendations of the CDC immunization practices Advisory committee. (MMWR, 40 RR13 : 1-25, 1991). Nor-responders are those whose antibody levels never exceed 10 IU / L after hepatitis B immunization and poor responders are those individual with antibody levels less than 100 IU/L who should receive a booster dose to be adequately protected. ⁽¹⁾ Antibodies resulting from immunization decline after 5 years. Tizley and colleagues ⁽¹⁾ suggested a booster dose in healthy individuals when the antibody titer fell below 500 mIU/ml to provide full protection for at least 3 years.

In present study, out of 72 persons immunized with 3 doses of vaccine, 12.5 % were found to achieve anti HBsAg titer below immunity threshold (< 10 IU / L). While, 76.9% of the children & 89.8 % of the adults were achieved a protective titer (>10 IU/ L). In study by S.Kuhail et al ⁽¹¹⁾, 14.6 % were found be non-responders & in study by Antonio Parlato et al⁽²⁾ 64.3 % of the children and 89.2 % of adults were found to achieve protective titer. These show a good similarity between present & other studies.

The present study also revealed a little high percentage of seroconversion amongst male (90.1%) as compare to female (82.6 %). Out of 34 persons who were tested for anti HBsAg titer at 3 to 36 months after 3rd dose of hepatitis B vaccine, 33 (97.1 %) shown protective titer. While 81.1 % of the persons having passed 36 months after 3rd dose of vaccine shown a protective level of titer.

In present study, 22.2 % were found poor responders, who have achieved titer between 10 – 100 IU / L, such population was 34.8 % in study by S. Kuhail et al⁽¹¹⁾. 36.1% were found to have titer between 100 – 500 IU / L.

Tizley & colleagues⁽¹⁾ suggested a booster dose in such healthy individuals with antibody titer fell below 500 IU / L to provide full protection for at least 3 years. Present study revealed all of the individual received titer more than 100 IU / L, which shows effectiveness of booster dose. According to study by Antonio Poralato et al⁽²⁾ all adults & all but 6 children responded to a booster dose of vaccine; Pre booster and post booster antibody titer were strongly correlated with each other; Over all, the booster dose elicited a rapid and vigorous anamnestic response.

Conclusion:

The present study shows that ,12.5 % of the fully vaccinated (3 doses) persons are non responders (Anti HBsAg titer < 10 IU / L). Such persons should be revaccinated to attain protective titer. 22 % of the fully vaccinated (3 doses) persons had Anti HBsAg titer between 10 – 100 IU / L, which is protective titer but they can be considered as poor responders. Probably such persons require booster dose. 36 % of the fully vaccinated (3 doses) persons had Anti HBsAg titer between 100 – 500 IU / L. Which is protective titer and they can be considered as responders. The titer in such persons can be improved by booster dose. Remaining 29 % fully vaccinated (3 doses) persons had Anti HBsAg titer > 500 IU / L. Which is protective titer and they are considered as responders. 100 % of the persons who received 4 doses of the vaccine, attained the protective titers (> 100 IU / L). None of them are non responder or poor responders. This emphasizes the booster effect of the fourth dose but further studies are needed to assess long term protection after vaccination and need for booster dose of the vaccine.

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3] A STUDY OF 40 CASES INTRATHECAL KETAMINE IN PATIENTS UNDERGOING ROUTINE AS WELL AS EMERGENCY SURGERY

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Abstract:

Background: Intrathecal Ketamine is a safe and effective anaesthetic drug which can be used in the anaesthetic management of routine and emergency surgeries..

Aims: To Assess the efficacy of Ketamine as s sole spinal anesthetic agents and observe the onset and duration of sensory and motor blockade.To study the effect of the adrenaline with Ketamine on the quality and duration of analgesia.To observe cardiovascular and respiratory stability of the patients and to study effect on post operative analgesia.

Setting and Design: Anaesthetic from Department of Anaesthesia and Surgeons and Orthopedic surgeons of B.J Medical College Ahmedabad. Gujarat. India.

Material and methods: The present study was carried out in 40 patients of either sex to evaluate the efficacy of administering intrathecal Ketamine for routine and emergency surgeries. The patients selected were from age group 20-50 yearsand with ASA grade I and II. They were further divided in Group I 20 patients receiving intrathecal Ketamine without adrenaline and Group II 20 patients receiving intrathecal Ketamine with adrenaline.

Result: 40 cases in which intrathecal Ketamine was given with or without adrenaline to evaluate the efficacy of intrathecal Ketamine for surgical purpose this study included the observations of onset and duration of sensory and motor blockade, effect on the level of consciousness, post operative analgesia, cardiovascular and respiratory stability during intra operative period.Majority of patients belong to 20-30 age group with majority being male paitens. Onset of sensory and motor block is almost equal in both groups which is no significant but duration of sensory and motor block was prolonged in group II in comparison to group I patients.

Conclusion: Thus we conclude that intrathecal Ketamine is effective as a spinal anesthetic agent for surgical purpose with quick onset of action, effective sensory and motor blockage.

Keywords: Intrathecal Ketamine, Routine Surgery, Emergency surgery.

Introduction

Regional anesthesia is not an excuse for taking short cuts in patients care; rather it is very satisfying way to make patient care better.

The spinal subarachnoid space was identified by J.Leonard Coring (1885) by accidental dural space puncture in dogs. With the introduction of spinal analgesia for pain relief during surgery by August Bier in 1889, one more technique was gained by the anesthetists without the complications of general anaesthesia.

The regional anaesthesia has much to offer to the patients, surgeons and anesthetists, all the three, due to its simplicity of administration, preservation of consciousness, good analgesia with least side effect since its introduction in 1885, of the many regional anesthetic techniques, spinal anesthesia has remained the most favorite technique of anesthesia for the lower limb and lower abdominal surgeries. Moreover, the drugs used are less costly and hence the over all procedure costs much less. The technique also preserves the

consciousness and thus the protective airway reflexes are maintained reducing the chances of aspiration, intraoperative narcotics are not required but the addition of narcotic and NSAIDS to the w local anaesthetics procedures excellent relief from post operative pain. Most commonly used local anesthetic agents in spinal anaesthesia are xylocaine and Bupivacaine, the problem associated with local anaesthetics in spinal anaesthesia is that they produce hypotension intraoperative and therefore they are not good in shock and hypovolaemic patients, a conditions commonly associated with accident and injured patients.

Ketamine is a phencyclidine derivative with potent analgesic properties which has gained popularity as a sole intravenous anesthetic for short surgical procedures. It was introduced as a spinal anesthetic drug in animals in 1979 and found to have advantage for not producing hypotension. Dr J.F.Bion2 (1984) used Ketamine for the first time for war injuries during fighting on thiocambodian border. In majority of patients who were in shock, administration of intrathecal Ketamine either maintained or improved their hemodynamic. After the, Dr S.K. Bansal 1 carried out a study with different dose of Ketamine with or without adrenaline and found adrenaline prolongs and improves the block produced by Ketamine.

However, the number of studies done was so less that we decide to conduct this study, to observe and confirm with added confidence.

Aims of Study:

This study was done to:-

- Assess the efficacy of Ketamine as s sole spinal anesthetic agents.
- To observe the onset and duration of sensory and motor blockade.
- To study the effect of the adrenaline with Ketamine on the quality and duration of analgesia.
- To observe cardiovascular and respiratory stability of the patients.
- To study effect on post operative analgesia.

Material and Method.

The present study was carried out in 40 patients of either sex to evaluate the efficacy of administering intrathecal Ketamine for surgery.

Selection of patients.

The criteria adopted for selection of patients are as follows.

- 1) Age of the patients 20-50 years.
- 2) Physical status ASA Grade I and II
- 3) Under going routine and emergency surgeries from general and orthopedic services.
- 4) Patients with MI, HT, bleeding disorders psychiatrics patients, CVA and with head injuries were excluded.

Pre Anesthetic Assessment:

All the patients were examined in details and history regarding the present illness and other history of major illness like DM, HT< bronchial asthma, epilepsy, bleeding disorders, any other history of drug therapy, surgery done in past was taken , history of last meal taken in emergency cases.

In G/E vital data like pulse, blood pressure and respiratory rate were noted, In S/E including respiratory, Cardiovascular, alimentary and CNS system were examined.

The vital parameters like pulse, blood pressure and respiratory rate were monitored immediately and at 2 min, 5 min, 10 min and then every 15 min up to end of procedure intraoperative and monitored for the onset of Analgesia by pinprick and for level and onset of sensory block and for peak effect of analgesia.

Degree of motor block is assessed by bromage scale.

Grade 0	no motor block
I	Partial, able to flex knee.
II	Unable to flex Knee
III	Unable to move the legs.

And for duration of block, quality of muscular relaxation was specifically monitored in abdominal surgeries. All the patients were observed for level of consciousness as per scale.

Grade 0	Alert
I	Drowsy
II	Sleepy but arousable
III	unarousable with loss of verbal contact.

And complication like nausea, vomiting, hypotension, bradycardia and high spinal and were treated accordingly. It should be looked for irrelevant talking, hallucinations and delusion. In all the patients' total duration of analgesia was noted.

Supplementation:

G/A was supplemented if anaesthesia lasted shorter duration or patchy effect, IV fluids were given as per the requirements of the surgery and blood loss was replaced with blood transfusion.

Post operative period.

All the patients were observed for total duration of sensory and motor effect of drug and for duration of post operative analgesia. All the patients were observed for vital signs till the effect started wearing off, and then 2 hourly for 6 hours and then on 2nd post operative day and at the time of discharge. All the patients were observed for post operative complications like nausea, vomiting, bradycardia, hypotension, headache, backache, urinary retention and other neurological complications and for emergence phenomenon.

Observation and Results:

The present study consisted of 40 cases in which intrathecal Ketamine was given with or without adrenaline to evaluate the efficacy of intrathecal Ketamine for surgical purpose this study included the observations of onset and duration of sensory and motor blockade, effect on the level of consciousness, post operative analgesia, cardiovascular and respiratory stability during intra operative period.

Table I

AGE	GROUP I		GROUP II	
	No of cases	Percentage	No of cases	Percentage
20-30	9	45	6	30
31-40	6	30	8	40
41-50	5	25	6	30
Total	20	100	20	100

Table II

Sex variation of patients.

Sex	Group I		Group II	
	No of cases	Percentage	No of cases	Percentage
Male	15	75	18	90
Female	5	25	2	10
Total	20	100	20	100

Majority of Patients were male.

Table III

Routine versus emergency cases.

Case type	Group I		Group II	
	No of cases	Percentage	No of cases	Percentage
Routine	13	65	17	85
Emergency	7	35	3	15
Total	20	100	20	100

Table IV

Type of Surgical Procedure:

Procedure	Group I No of cases	Group II No of cases
Herniorrahphy	00	05
Appendisectomy	00	01
Retrograde Urethroscopy	00	01
Fistulectomy	01	02

Debridement	05	01
B.K. Amputation	00	02
Implant removal	02	01
Lords plication	02	04
STSG	05	01
2degree suturing	01	00
Abdominal tubal ligation	02	01
Incision & drainage	01	00
Sub facial ligation	01	01
Band ligation of piles	01	01
Total	20	20

In this study cases are taken from ASA grade I and II only.

Table V

ONSET AND DURATION OF SENSORY BLOCK

Group	Sensory block		Motor block	
	Onset	Duration	Onset	Duration
Group I				
Mean	69.75 sec	34min	138.0sec	29.5min
SD	27.36	3.83	34.2	3.79
Group II				
Mean	76.25 sec	46.0 min	57.5 sec	40.7 min
SD	51.70	9.54	23.5	7.48

M = Mean value, SD = Standard deviation.

Onset of sensory and motor block is almost equal in both groups which is no significant but duration of sensory and motor block was prolonged in group II in comparison to group I patients.

Table VI

INTENSITY OF ANALGESIA, DEGREE OF MOTOR BLOCK AND LEVEL OF COUSCIOUSNESS.

Group	Intensity of Analgesia				Degree of Motor Block				Level of consciousness			
	No of cases (%)				No of cases (%)				No of cases (%)			
	0	I	II	III	0	I	II	III	0	I	II	III
Group I	-	-	-	20 (100%)	-	-	4 (20%)	16 (80%)	2 (10%)	7 (35%)	11 (55%)	-
Group II	-	-	-	20 (100%)	-	-	1 (5%)	19 (95%)	-	8 (40%)	12 (60%)	-

Thus in both the groups intensity of analgesia was 100%, the degree of motor block was Grade III in 80 % of group I patients and 95% of group II patients. Thus no. of patients was having Grade III motor block in group II patients.

Level of consciousness was grade II in 55% of group I patients and 60% group II patients.

Thus it was observed that degree of motor block was more after addition of inj. Adrenaline where as intensity of analgesia remain same. In both group, patients remain sleepy by arousable (Grade II) in more than 50% cases.

Table VII.1

HAEMODYNAMIC CHANGES – PULSE RATE/MIN

Group		Pre-op	After 2min	After 5min	After 10 min	Post-op	P value.
I	M	84.9	84.9	83.0	83.9	84.4	N.S
	SD	7	7	6.56	6.91	5.64	
II	M	84.5	86.2	87.4	87.8	90.6	<= 0.05
	SD	7.19	5.54	6.74	7.33	7.68	

Table VII.2

HAEMODYNAMIC CHANGES – BLOOD PRESSURE mm Hg

Group		Pre-op	After 2min	After 5min	After 10 min	Post-op	P value.
I	M	118.5	118.5	110.0	112.5	117.5	N.S
	SD	7.45	7.45	7.2	9.6	8.5	
II	M	119.0	119.5	118.0	119.5	125.5	<= 0.05

	SD	9.1	8.2	12.3	10.9	8.2	
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Table VII.3

HAEMODYNAMIC CHANGES – RESP. RATE/ MIN

Group		Pre-op	After 2min	After 5min	After 10 min	Post-op	P value.
I	M	18.35	18.35	18.35	18.35	18.35	N.S
	SD	1.26	1.26	1.26	1.26	1.26	
II	M	18.5	18.7	18.7	19.3	19.3	<= 0.05
	SD	1.27	1.17	1.17	1.03	1.03	

M = Mean value , SD = Standard deviation, P = <= 0.05 significant

It is evident from the above observation that there is minor increase in pulse rate, blood pressure, and respiratory rate after the addition of inj Adrenaline that is significant, otherwise the patient remained haemodynamically stable intra operatively and post operatively.

Intraoperatively only 2 patients suffered from nauseating sensation and one patient develops irrelevant talking, no other complication was found.

Postoperatively 2 patients develop headache and 2 patient's backache which might be due to spinal anaesthesia.

Summary and Conclusion:

The present study of 40 patients evaluated the relative efficacy of drug Ketamine (1.5mg/kg) alone and with Inj Adrenaline used for spinal anaesthesia. Post operative analgesia was also evaluated. Each group consists of 20 patients from ASA Gr. I and II

The onset of sensory and motor block is almost equal i.e. 1.5 to 3 min in both the groups. Duration of sensory block was 34 min in group I and 46 min in gr II and motor block was 29.5 min in grade I and 40.7 min in grade II (mean value). Thus duration was prolonged in gr II patients. Intensity of analgesia Grade III (100%) in both groups. Of patients, degree of motor blockage was grade III in 95% of group II patients and 80 %

Of grade I patients. In both groups patients were sedated but almost 60 % Patients were sleepy but arousable.

Patients remained haemodynamically stable intra operatively. There was mild increase in pulse, B.P, resp. rate in Group I patients that was not significant. In Group II patients there was increase in pulse, B.P. , resp rate which was significant.

One patient develops irrelevant talking intra operatively and 2 patients develop nauseating sensation and treated accordingly, muscular relaxation was good for abdominal surgeries. Post operatively all vital parameters were stable and no complications observed.

Thus we conclude that intrathecal Ketamine is effective as a spinal anesthetic agent for surgical purpose with quick onset of action, effective sensory and motor blockage.

All the patients remained haemodynamically stable even in hypovolaemic patients with least intraoperative and postoperative complications. And good post Op. analgesia thus it is very useful as a spinal anesthetic agent when patient is in shock.

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4] INCIDENCE OF CERVICAL HUMAN PAPILLOMA VIRUS INFECTION & IMPACT OF VARIOUS CONTRACEPTIVE METHODS

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Introduction

Human Papilloma viruses are among the most commonly sexually transmitted diseases¹ Human Papilloma virus infection may be asymptomatic or may be manifested in various benign or malignant lesions, most notably warts on cutaneous & mucosal surfaces & anogenital neoplasia or carcinoma.²

The incubation period of HPV disease was established experimentally by inoculation of human species with extracts of cutaneous warts³. Most often, warts developed within 3-4 months although lesions occasionally grew as early as 6 weeks or as long as 2 years after inoculation. All types of squamous epithelium may be infected by HPV, but other tissues appear to be relatively resistant⁴.

Papillomaviruses infect epidermal cells still capable of proliferating, commonly basal layer cells via micro – lesions or at sites where such cells are normally exposed to the surface. This occurs regularly at the junction of different epithelia & seems to account for the preferential localization of cervical intraepithelial neoplasias at the transformation zone where 90 % of all cervical lesions develop. The large transformation zone in young women seems particularly vulnerable to these infections⁵.

Materials & Methods

In present study random 110 cases attending Gynecology OPD of Guru Gobindsingh group of Hospital, Jamnagar with various complains were examined for cervical HPV infection during year January 2003 to March 2004. 53 samples were collected from women with normal cervix while 57 samples were collected from women with cervical lesion on visual examination.

A detailed clinical history with history of contraception method was taken. After taking patient's consent cervical smear was collected using Ayre's spatula. The smear was fixed by covering it with methanol for 2-3 minutes & stained by Giemsa Stain. Diagnosis of HPV infection was done by demonstrating Koilocytotic Atypia, dyskeratosis, binucleation & clear cytoplasm in squamous epithelial cells

Results

It has been observed that out of 110 cervical samples collected, 12 cervical samples were positive for HPV infection (10.9%). Age wise distribution of HPV infection shows high incidence in age group of 20-29 (16.60%) & 50-59 (20%)

In our study use of condom shows absence of HPV infection. Women's using Intrauterine device also shows low incidence of HPV infection. Other methods of contraception have no such association

	No Contra ception	Oral contra ceptiv e pills	Itra uterin e devic e	Co nd o m	Perma nent sterili sation
HPV Positiv e	6 (15%)	02 (13.33 %)	01 (5%)	0 (0 %)	03 (11.5 %)

Discussion

Human papilloma viruses are widespread through out the population⁵. The American Social Health Association reported estimates that about 75-80% of sexually active Americans will be infected with HPV at some point in their lifetime⁶. In comparison to 10.9% incidence in present study, Ghiradini reported 4%⁷, Hagmer from Sweden 12.8%⁸, Sharma B.K. from New Delhi 20%⁹ while Rezza G. reported 36.4%¹⁰ incidence of HPV infection. Estimates of HPV prevalence vary from 14% to more than 90%¹¹. One reason for the difference is that some studies report women who currently have a detectable infection, while other studies report women who have ever had a detectable infection.

Dunne FE shows incidence of 44.8% in 20 to 24 year, 27.4% in 25 to 29 year & 19.6% in 50 to 59 year age group¹² in comparison to 16.6% in 20 to 29 year & 20% in 50 to 59 year age group in present study. Incidence of cervical HPV infection decreases with high age due to reduced risk behavior & due to increased acquired immunity at the systemic & mucosal level over time². But an older woman in whom HPV is persistent is at highest risk of developing cervical carcinoma¹³. In this study also, both women with high age with HPV infection were thereafter diagnosed as having cervical carcinoma & this may be the reason of high incidence of HPV infection in older women in present study.

Egendorf concluded that among newly sexually active women, consistent condom use by their partners appears to reduce the risk of cervical & vulvovaginal HPV infection¹⁴. Moscicki AB suggested that regular condom use can effectively limit the ongoing persistence and spread of HPV to additional genital sites in individuals who are already infected¹⁵. Same findings are noticed in present study indicating effectiveness of condom in prevention of HPV infection. Low incidence of HPV infection in women using intrauterine device needs to be further investigated.

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5] SURGERY IN ELDERLY PATIENTS A PROSPECTIVE STUDY OF 300 CASES.

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Abstract:

Background: Our society is continuing to age. Medical advances in the last century have enabled people in our society to live longer and to remain healthy for a significant greater amount of time during the period of aging.

Aims: this study of Surgery in Elderly has been undertaken to know what has liberalized the surgical indications and how the outcome of surgery has been influenced by age and associated disease.

Setting and Design: Patients from Department of Surgery Baroda Medical College and SSGH hospital Baroda Gujarat. India.

Material and methods: The present series comprises of the study of 300 cases of surgery in elderly patients with an emphasis on the type of disease, associated diseases, surgical intervention, post operative complications, morbidity, mortality and average hospital stay.

Result: 300 cases were been reviewed as per their age group with all the associated diseases and was seen that in the group C the mortality, morbidity, hospital stay and the complications were more compared to the other groups. It is also seen that as the age increases there was a tremendous increase in the percentage of complication occurring in both the groups.

Conclusion: Thus we conclude that in the elderly above the age of 85 years the morbidity and mortality greatly increases and these are the patients who need a special care.

Keywords: Surgery in Elderly, Elective surgery, emergency surgery,

Introduction:

Our society will continuing to age and with luck the trend will continue. The term aging is commonly used to refer to post maturational process that are deteriorative and lead to an increased vulnerability. Why we study aging? It is a problem of conspicuous sociological importance. The accelerating increase in the population of older individuals all over the world, the corresponding increase in the need of medical services as well as long term care provide an enormous social challenge.

The function of the surgeon is to establish and to maintain the optimum conditions for a smooth post operative outcome by avoiding or controlling the factors that may interfere with the biological process.

This smooth post operative outcome has further liberalized surgical indications in the elderly. This study of Surgery in Elderly has been undertaken to know what has liberalized the surgical indications and how the outcome of surgery has been influenced by age and associated diseases.

Aims of Study:

This study was done to:-

1. The type of surgical diseases present in the different subdivided groups in elderly patients.
2. The involvement of systems of the body or type of different diseases in the elderly patients.
3. Type of associated systemic disorder present in the different age groups.
4. Type of surgical intervention emergent or elective done and their impact on post operative outcome.
5. Type of anaesthesia used and the associated mortality rate.
6. The different types of post operative complications occurring in different age group.
7. The average hospital stays required by the elderly surgical patients.
8. The associated morbidity and mortality rates in the elderly surgical patients.

Material and Method:

The present study comprises of the study of 300 cases of surgery in elderly patients with an emphasis on the type of disease, associated diseases, surgical intervention, post operative complications, morbidity, mortality and average hospital stay.

The criteria for age group was 65 years and above. These cases were divided as per the system involved that is general surgery, central nervous system, thoracic diseases, gastrointestinal system, and genitourinary system. Again the type of surgery was classified into various categories as (1) Emergency and Elective. (2) *patients with associated medical diseases and without it.

Routine and specific investigation were been performed which included.

Blood pressure, Hemoglobin, ESR, Serum Electrolyte, Random blood sugar, S. proteins, LFT, S. Cholesterol, S. Creatinine, X ray chest, ECG/Echocardiography, Ultrasonography.

The patients were followed preoperatively, perioperatively and post operatively and a note was made about any complication occurred in the immediate or late postoperative period. The complications that were seen in these series were wound complication, hypotension, electrolyte imbalance, septicemia, respiratory failure, cardiac failure, renal failure.

The prevalence of the systemic diseases in elderly patients were noted and the effect of these systemic diseases either directly or indirectly on the perianaesthetist risk, post operative complications, and the hospital stay of the patients were noted.

An account was made about the average hospital stay, morbidity and mortality in this age group. After discharge the patients were followed in OPD up to six months.

Observation and Results:

Out of 300 cases that were studied in the present series the distribution as:

Group A patient between 65-74 years
Group B patient between 75-84 years
Group C patient between 85-100 years

This group was further divided according to the system involved. In group A there were 69.33% male and 11.66% female, in group B it was 11% and 2.66% and in group C it was 3.66% and 1.66% respectively.

Emergency versus elective surgeries in group A 24.66% and 56%, group B 3.66% and 12%, group C 1.66% and 3.66% respectively. Table I gives details of the associated systemic diseases.

Table I

Group	Anemia	Hypoproteinaemia	Diabetes	Uremia	Jaundice	Cardiac Abnormality	Resp Abnormality
A	79	30	15	21	06	18	11
	32.51%	12.34%	6.17%	8.64%	2.46%	7.40%	4.52%
B	15	04	00	06	00	09	06
	36.58%	9.75%	00%	14.63%	00%	21.95%	14.63%
C	08	01	00	03	00	03	05
	50%	11.66%	5%	10%	2%	10%	7.33%
Total	102	35	15	30	06	30	22
	34%	11.66%	5%	10%	2%	10%	7.33%

These figures suggest that as the age increases the prevalence of anemia, uremia, Cardiac abnormality and respiratory diseases increased which lead to an increase in the post operative mortality and morbidity and the hospital stay. General anesthesia was used more in emergency cases while regional anaesthesia was been used in elective surgeries. The mortality were more seen when the patients were induced with GA 3.93% as compare to regional anesthesia 0.98%, this suggest that regional and local anaesthesia is been preferred to general anesthesia.

Table II

Postoperative complication	Emergency (%)			Elective		
	A	B	C	A	B	C
Hypotension	4	-	2	2	1	-
	5.4		40	1.19	2.77	
Septicemia	12	1	2	2	1	-
	16.21	9.09	40	1.19	2.77	
Unconsciousness	1	-	-	-	-	-
	1.35					
Loss of memory	1	-	1	-	-	-
	1.35		20			
Paraplegia	-	-	-	1	-	-
				1.19		
Bronchopneumonia	2	-	-	5	-	-
	2.7			2.97		
Uremia	-	-	1	3	-	-
			20	1.78		
Wound Discharge	-	-	-	4	-	-
				2.38		
Wound Infection	10	3	-	21	5	1
	13.51	27.27		12.5%	13.88	9.09
Wound gapping	-	1	-	11	2	-
		9.09		6.54	5.55	

Delayed healing	8	1	-	5	-	-
	10.82	9.09		2.97		

These figures suggest that the post operative complication occurred more frequently in the emergency surgery than elective surgery in elderly patients. It also suggests that as age increases the rate of life threatening complications increases leading to increased morbidity and mortality.

Table III

	A	B	C
Mortality	13	1	2
	5.34%	2.43%	12.5%
Morbidity	107	22	9
	44.03%	53.65%	56.25%

This figure suggests that as age increases the morbidity figures increase tremendously while the mortality rate steadily increases.

Summary and Conclusion:

In this series of "Surgery in Elderly" in 300 prospective elderly patients above 65 years of age during a three year period was done at medical college Baroda. with reference to different diseases affecting different system, presence of associate diseases, type of

Surgery performed type of anaesthesia, post operative complication, morbidity, mortality and average hospital stay.

- 82% patients were between the age group 65-74 years, 13.66% of patients were between 75-84 years, 5.33% were between 85 years and older.
- There were more male patients in all the three groups.
- 77 patients presented with general surgical pathology, 17 with CNS pathology, 12 patients with thoracic pathology, 122 patients with gastrointestinal pathology, and 72 patients with genitourinary pathology.
- As age increases the prevalence of associated diseases increases.
- Post operative complication occurred more frequently in the emergency surgery than elective surgery in elderly patients. It also suggests that as age increases the rate of life threatening complications increases leading to increased morbidity and mortality.
- The mortality were more seen when the patients were induced with GA 3.93% as compare to regional anaesthesia 0.98%, this suggest that regional and local anaesthesia is been preferred to general anaesthesia.

This suggests that in the elderly above the age of 85 years the morbidity and mortality greatly increases and these are the patients who need a special care and more hospital stay.

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6] STUDY OF VIRECHANA KARMA WITH TRIVRITADI CHURNA IN THE MANAGEMENT PSORIASIS

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Among all skin diseases, 'PSORIASIS' (named in modern science) , is a very distressing disease both for the patients and physicians because of its pathogenic mechanism. The etiology is still undetectable. In modern science psoriasis is described as a psychosomatic disorder. In 10 to 30 percent cases it is found in more than one member in the family. It can occur almost at any age and involves both the sex equally. Psoriasis

now a dsys become more problem among people. It is a common, chronic, recurrent inflammatory disease of skin. In ayurvedic epics *Panchkrma therapy* (sodhan therapy) has chief dominance. Disease manages and apruted by panchkrma are rarely reoccur and enhance prophylactic action as almost all skin disease are *raktaprdosaj* and *sodha sadhy vyadhi*. our object of this stdy is to observe the result and efficacy of virachan karma with two different yoga in the psoriasis.

In this subject of "*Psoriasis*", work has been done previously with vaman karm purvak saman, virechan karm purvak saman etc., but nobody has done study on virechan karma.

Aims and objectives:

- 1) To study the etiology, pathology, symptometology and the progress of the disease i.e. nidan panchak and dhosh vrudhhi, according to ayurvedic science as well as modern science.
- 2) To assess the efficacy of shodhn karma (virechan karma) in management of Psoriasis.

MATERIAL & METHODS :

Criteria of Patient Selection:

Patients will be selected irrespective of Age, Sex, Caste, Religion & Profession from O.P.D. & I.P.D. of Govt. Akhandanand Ayurved College - Hospital, Ahmedabad. And Government Shrimati Maniben Ayurved Hospital, Ahmedabad. And then they will be randomly grouped for the Study.

All the patients coming in the O.P.D. & I.P.D. of Govt. Akhandanand Ayurvedic Hospital were randomly divided into two groups. Prior to that the patients were subjected to various investigations already described above. A detailed proforma specially prepared for this purpose was filled. 10 patients were used as subject. And 10 patient ware used as control groupThe management plan was as under.

Virechana karma with Trivritadi churna

In this group 10 patients of Ekakushtha were first given trikatu churna3gm/t.d.s.(3 days) for dipen pachan than snehpan with tictsatpaladi ghrut (3 to 9 days). was given as per kostha and than abung swedan for three days followed by Virechanakarma done by Trivrut, Trifla, Danti. they were examined for their general condition as well as to find any disorder in which Virechana therapy is contraindicated. The difference in treatment is only different yoga for Virechana karma. Pathya - Apathya was advised according to classical reference of Kushtha.

Result and Discussion

- ◆ Higher incidence of Eka Kushtha was reported in the age group of 41-60 years.
- ◆ Higher incidence was found in males (60%) when compared to females.
- ◆ Family history was not supporting in many patients which suggests atopicity in individuals. Disease presents with Gradual onset with chronic nature & is a chirakari

vyadhi, which even supports the classical verse: 'Sheegrotpatti chirasthiti'. The disease used to aggravate during winter season & due to contacts with chemicals was also found. In majority the disease presented itself in progressive state.

- ◆ Socio-economic status: 100% were belonging to middle class family.
- ◆ Dietary habits: 80% were vegetarians., even then there is intake of more madhura rasa, amla ras & lavana rasa , Intake of viruddahara, apathya vihar is taken as a reason. 90% of patients were following regular dietary habits & majority 76.66% were consuming excess of katu ahara. 80% of patients were also taking ushna gunayukta ahara.
- ◆ 90% were taking tea only, which hampers the process of digestion.
- ◆ Higher incidence of Vishamagni (40%) was found.
- ◆ Study shows 70% with madhyama kosta.
- ◆ Higher incidence was found in patients with vata pitta prakriti. Study predicted highest involvement of raja prakriti(70%).
- ◆ The data of chronicity among 20 patients reveals that majority (50%) were suffering from the disease since <1 yrs.
- ◆ Majority of the patients i.e.80% had aggravation during winter season.
- ◆ Effect on MATSYASHAKALOPAM with Trivritadi churna was providing 87.5% relief which showed highly significant improvement at $P < 0.001$.
- ◆ Effect on VARNA was 65% relief obtained which is statistically highly significant at $P < 0.001$.
- ◆ In PIDIKA 100% relief observed but it is statistically not significant at $P < 0.10$.
- ◆ Effect on KANDU shows relief of 58.82% seen, which is statistically highly significant at $P < 0.01$.
- ◆ Therapy showed relief in DAH 100%, but it is statistically not significant at $P < 0.10$.
- ◆ Effect of Virechana on VEDANA, was 62.5% observed, which is also statistically not significant at $P < 0.10$.
- ◆ Effect of on RUKSHTA,87.5% relief was seen with statistically highly significant result at $P < 0.05$.
- ◆ In case of VATA dushti, 68.70% relief was seen which is also statistically highly significant at $P < 0.001$.
- ◆ In PITTA prakopa, improvement of 83.90% seen with a highly significance level at $P < 0.001$
- ◆ In KAPHA dushti, relief of 91.32%, with highly significant at $P < 0.001$.
- ◆ In RASVAHA srotodushti there were relief of 42.22% was observed. Same way in case of RAKTAVAHA srotodushti 75% relief was seen. In MANSAVAHA srotodushti 81.74% relief was seen in Group II. In case of SWEDAVAHA srotodushti lakshanas 68.38% relief was observed
- ◆ 25 % relief was found in Auspitz sign and in Candle grease sign.
- ◆ 6 patients i.e.60% showed Marked Improvement. Moderate Improvement was seen in 4 patients i.e. 40%. . No one was observed to have Mild Improvement & No Response.
- ◆ Overall results indicate that virechan is having promising result in case of eka Kushtha.

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7] MANNERS OF FATAL POISONING DEATHS & ABUSED POISONS

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Introduction

Life and death are complimentary to each other, the two sides of the same coin. The weapon to end life is nothing but a handy agent poison. Poisoning is widely spread mode of death among all age groups and both sexes since antiquity. Poisoning, as a means of suicide, has gained popularity because of the general belief that it terminates life with minimal suffering.¹ The Poisoning is mainly suicidal or accidental but homicidal cases occur in children.^{2,3,4}

Due to rapid development in field of science and technology and vast growth in industrial and agricultural sector incidence of poisoning is spreading like wild fire.^{1,5} According to WHO, three million acute poisoning cases with 2, 20000 deaths occur annually. Of these 99% of fatal poisoning occur in developing countries particularly among agriculture workers.⁶ In the last half century because of modernization of farming methods, developing nations suffered most and this is sometimes increased by less stringent controls and less safe working methods.² A number of chemical substances, which are developed, to save agricultural products from rodents and pests, so as to protect human beings from starvation, are in fact themselves becoming man-eater.¹ In rural & urban areas increasing use of pesticides which the scientist thought a boon to the humanity, is proving to be a bane because of gradual increase in suicidal & accidental poisoning due to their easy availability & ignorance of illiterate population.⁷

In changing scenario of increasing poisoning deaths, medico legist has to be well conversant not only with different prevalent poisons and their fatality but also with the different manners of death associated with them. Present study is conducted to reveal association between gender and nature of fatal poisoning death in around Ahmedabad and to find out preference of poison. As a corollary however, its use in the homicidal and accidental death were also dealt with in similar context.

Materials and methods

The present study has been conducted on the subjects brought for postmortem at the mortuary of Civil Hospital attached to B. J. Medical College, Ahmedabad during the years 2002 and 2003. During the period of 2 years 5296 autopsies were conducted at the mortuary out of which 410 cases were with the alleged history or suspicion of intake of poisonous substance.

Relevant data were acquired in performa and by analyzing inquest, hospital case papers, post mortem examination, FSL reports and inquiry with police and relatives.

Results

It has been observed that during 2 years, there were 410 cases of poisoning deaths which constituted 7.74 % of total 5296 autopsies. The no of poisoning deaths in 2002 were 8.08%, & in 2003 were 7.39% of total autopsies.

Out of 410 poisoning cases 275(67.07%) were male and 135(32.92%) female. Males outnumber the females in both years.

Amongst various types of poisons incidence of Organo phosphorus poisoning (55) was highest in this two years with Aluminium Phosphide (41) as second highest and carbamates(31) is third commonest poisoning out of 410 poisoning cases. Commonly males preferred O. P. and carbamates and females preferred Aluminium Phosphide. Other poisons like Endosulfan, HCL, HCN, Kerosene, Ethyl Alcohol, Chloroquine etc. were also observed.

Manners of poisoning deaths observed is in table 1 shows suicide is the most common mode of poisoning 77.56 % followed by accident 20 % and homicide only 01.46 %. Males outnumbered females in suicide, homicide and accident cases.

Table 01: Manners of poisoning deaths in year 2002 – 2003

Manners of Death	Sex	2002 (%)	2003 (%)	Total & (%)
Suicide	Male	106 (49.07)	103 (53.09)	209 (50.97)
	Female	68 (31.48)	41 (21.13)	109 (26.58)
	Total	174 (80.55)	144 (74.22)	318 (77.56)
Homicide	Male	03 (01.38)	01 (00.51)	04 (00.97)
	Female	01 (00.46)	01 (00.51)	02 (00.48)
	Total	04 (01.85)	02 (01.03)	06 (01.46)
Accident	Male	31	27	58

		(14.35)	(13.91)	(14.14)
	Female	05 (02.31)	19 (09.79)	24 (05.85)
	Total	36 (16.66)	46 (23.71)	82 (20.00)
Unknown	Male	02 (00.92)	02 (01.03)	04 (00.97)
	Female	00 (00.00)	00 (00.00)	00 (00.00)
	Total	02 (00.92)	02 (01.03)	04 (00.97)

Discussion

Various types of agents have used in the past to cause poisoning. These may vary from state to state or from individual habits.⁸ In present study poisoning deaths constituted 7.74 % of total 5296 autopsies as compared to B. R. Sharma et al who reported 17.45 % poisoning deaths in their study.¹ Thus average in present series is lower than others suggestive of regional variations.

Males are involved twice as compared to females. The fact is evident from our study as well as study of other workers.^{2,3,4} Males outnumbered females 2.5:1 ratio.¹ Zine K U et al study on poisoning deaths indicate out of 255,males(174) and females(81)ie. M:F ratio 2.1:1.⁶ Also study of Dhatarwal & Harnamsingh(M-63.8,F-36.2)⁵, Dhatarwal & Dalal(M-68.6,F-31.3)⁹ & J S Dalal(M-63.1,F-36.8)¹⁰ who found more than 60% males & less than 40% females comparable to present study with 67.07% male & 32.92% female poisoning deaths. It might be due to that males are more active in farming business & they share more responsibilities of their families and prone to suicide.¹¹

In most of the cases history about the nature of death was clear.¹¹ Present study show suicide 77.56% as most common mode of poisoning which is comparable to Dr. Dhatarwal, Dr. Harnamsingh⁵ and Dr. B. R. Sharma's series¹ showing 96.2% % 89.05% suicide respectively. This endorses our view that inability to cope with demands put forth by the standards set by materialistic modern society is the major culprit¹. 20% of accidental poisoning in present series & 9.31% in Dr. B.R.Sharma's series points out ignorance & disregard of precautions to be observed in use & storage of poisons eg. insecticide, pesticide etc. Only 1.46% homicide in present series and 1.4% & 1.20% in remaining reveals that poisoning is rarely used for homicide.

Conclusion

It is found in present work that out of 7.74% of poisoning deaths annually, males outnumbered the females & Organo-phosphorus followed by Aluminium Phosphide are

commonly abused for self poisoning. Males dominated females in all manners of death, suicide being the most common. Therefore it is felt that prevention of poisoning should made a social issue & the people should be educated to take a realistic look at their problems.

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8] IMPACT OF GENDER /SEX ON PREVALENCE OF PAIN PRESENTATION AMONG ELDERLY PEOPLE IN SPECIAL REFERENCE TO MUSCULOSKELETAL PAIN.

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ABBREVIATION: CMP= CHRONIC MUSCULOSKELETAL PAIN

Introduction:

Most clinical pain disorders are more common in women than in men, particularly during the peak reproductive years. No much studies is done about prevalence f pain among elder female i.e. beyond peak reproductive years .The present study is focused on whether elderly female suffer more than male in special reference to chronic musculoskeletal pain compared to man.

Aim: The aim of the study was to know the prevalence and distribution of chronic musculoskeletal pain among elderly man and woman. And than to compare the prevalence of pain among females and males.

Method:

Six randomized elderly homes of Ahmedabad district were selected for study. 186 Man and 230 female were selected for who were suffering from chronic musculo skeletal pain,. CMP was defined as pain lasting longer than 3 months and was assessed for any of 10 anatomical locations i.e. neck, shoulder, higher back, elbow, wrist/hand, lower back, hip, knee, ankle, foot.

■ **Result:**

- 48.69% of females and 29.03% of males were suffering from chronic musculoskeletal pain at the time of study. There was significantly higher prevalence of CMP among female compared to male. [P<=0.05]
- Out of nine vrudhashram/Elderly Home of Ahmedabad
- Six were selected for study
- Total examined=416
- Sex distribution Male=186
- Female=230
- Age range 60 to 76 mean age 64

- 70 persons have no family members=16.8%
- 46 persons family member abroad=11.1%
- 300 persons family member in the city=71.1%

48.69% of females and 29.03% of males were suffering from chronic musculoskeletal pain at the time of study [P<=0.05] .There was significantly higher prevalence of CMP among female compared to male.

Table No 1: Table showing comparison of prevalence pain among elderly people among man and women

Gender	Total	presenting with pain	%
Man	186	54	29.03

Women	230	112	48.69
Total	416	166	P=Less than 0.05

Table No 2: Distribution of musculoskeletal pain according to site among men and women in our study

No	site of pain	Man	Women	total
1	Neck	4	2	6
2	shoulder	3	6	9
3	High back	5	5	10
4	Elbow	0	0	0
5	Hands	0	18	18
6	Low back	12	33	45
7	Hip	6	5	11
8	Knee	17	21	38
9	Ankle	1	9	10
10	foot	6	13	19
		54	112	166

P=less than 0.05

Discussions:

The study documented the fact that female suffer significantly more pain than male in elderly population.

A study presented recently to the International Association for the Study of Pain in Glasgow concludes that women generally experience more recurrent pain, more severe pain and longer lasting pain than men.

Not only this, but they feel pain in different ways to the opposite sex, offering different symptoms for the same conditions. A study at Ohio State University by sociologists John Mirowsky and Catherine Ross shows that females experience symptoms of psychological distress--including sadness, anger, anxiety, malaise, and physical aches and pains--about 30% more often than males. Their work complements earlier research that found women about twice as likely as men to experience major clinical depression and pain and depression interrelated. Women genuinely suffered more distress than men by all the measures in study.

John Mirowsky and Catherine Ross interviewed 1,282 women and 749 men aged 18 to 90 and asked them on how many of the last seven days they had experienced various emotions. In each case, women reported more days with symptoms of distress than men..

In the past, assertions about women's surplus of suffering have been dismissed because they were thought to be more emotional than men. In other words, females simply complained more than males, who hid their pain behind a stoic facade. Mirowsky and Ross examined that possibility and found that women did indeed express their emotions more than men. About 68% of the males in the study agreed or strongly agreed that they kept their emotions to themselves, compared to 50% of the females who responded similarly. Even after the researchers took these differences into account, women still showed more signs of distress than men. Old debate that divides the sexes –do women feel pain more profoundly than men? Now enough evidences are emerging that women may indeed be more long-suffering.

University of Iowa study discovered a biological link between pain and fatigue that may explain the reason why more women than men are having chronic pain and fatigue.

Study leader Kathleen Sluka, PhD., found a protein included in muscle pain works in conjunction with the male hormone testosterone to protect against muscle fatigue.

The study published in the Feb. 28 issue of the American Journal of Physiology -- Regulatory, Integrative and Comparative Physiology, researchers compared exercise-induced muscle fatigue in male and female mice with and without ASIC3 -- an acid-activated ion channel protein shown to be involved in musculoskeletal pain. Male mice with ASIC3 were less fatigued than female mice, but male mice without the ASIC3 protein showed levels of fatigue similar to the female mice.

The study found the difference in fatigue between male and female mice rely on both the presence of testosterone and the activation of ASIC3 channels, suggesting that they are interacting somehow to protect against fatigue.

Chronic musculoskeletal pain and fatigue often occur together -- as many 75 per cent of people with chronic, widespread musculoskeletal pain report having fatigue; and about 94 percent who have chronic fatigue syndromes report muscle pain.

. In one study, Keogh and his collaborators interviewed patients in a pain management program. Although the program reduced chronic pain for all the subjects, in follow up exams the women in the group reported pain levels as high as before the treatment -- whereas the improvements in the male group were longer lasting.

In another set of experiments, volunteers were asked to put their arms in an ice water bath. Men were found to have higher pain thresholds (the point where they began to feel pain), as well as higher pain tolerances (the point where the pain became too much). With the notion of gender distinctions in pain perception becoming more widely accepted,

scientists are now asking why men and women suffer differently, and whether treatments need to be made sex-specific.

Part of pain perception is clearly dependent on the genetic and biochemical differences between men and women.

"Women who concentrate on the emotional aspects of their pain may actually experience more pain as a result, possibly because the emotions associated with pain are negative. More work is necessary to find what lies at the heart of these differences. With greater understanding, doctors may one day improve the effectiveness of treatments by tailoring them to the gender of the patient.

Differences in CMP could not be explained by a different distribution of age, educational level, smoking status, overweight, physical activity, paid job or occupation, but its role seems complex.

Conclusion and implication:

Study reported a female predominance in the prevalence of chronic musculoskeletal pain (CMP). The mechanisms explaining these sex differences are poorly understood more researches are required in this area. There are two models proposed

1] Exposure model associated with incidence of high risk factors

2] Vulnerability model i.e. at any risk factor level females are more prone to MSP.

To conclude, sex differences in prevalence of CMP may partly be explained by sex differences in vulnerability to risk factors for CMP. More research towards sex-specific identification of risk factors for CMP is suggested. Further researches are required for role of ovarian estrogen and androgen in prevalence and perception pain especially in CMP. And eventually this lead to sex-specific tailor made treatment, prevention and management of CMP.

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9] STUDY OF UNDERGRADUATE MEDICAL STUDENTS' ATTITUDES TOWARDS COMMUNICATION SKILLS

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Introduction:

Communication is a complex phenomenon. Definitions vary in their emphasis on the verbal, non-verbal, content, process, informational, relational and cultural aspects of communication. In broad terms, it is perhaps most useful to think about communication as a transactional process in which messages are filtered through the perceptions, emotions and experiences of those involved. Adding to the complexity, communication occurs at several levels, including intrapersonal (e.g., patients' personal constructions of the illness experience), interpersonal, group, organizational, mass, and technological. In addition, communication in medicine can be oral, written, or computer mediated#####.

Medical students' attitudes towards doctor-patient communication have for long been a concern among medical teachers, curriculum planners and policy makers [1,2] and have been addressed in many studies.

In 2004 Liddell and Davidson [10] published the use of a questionnaire measuring medical students' attitudes towards five groups of consultation skills, one of which was communication skills. They performed a cross-sectional study of three consecutive classes of 357 final year students before and after attachments in general practice and a Consulting Skills Program. After the program, attitudes towards communication skills were more positive.

Objectives:

To investigate medical students' self-assessments of their communication skills through small quiz

Material and Method:

Present study was done in 85 first year MBBS student by using 13 questions with yes or no single answer, developed by Work Communication, UK%, which included following five areas of communications namely Listening, Blaming and Praising, Availability, Adapting Your Style as per need and General Communication Issues. Maximum score were 13. Responses scoring below 11 were considered to have poor communication skill.

Result:

Out of 85 students 44 females and 41 were males. We have recorded score of students in to three divisions: less then 11, 11-12 and 13. This is recorded as follow:

	F	M
<11	20	12
11-12	22	28
13	2	1

Total	44	41 (P = 0.795)
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Discussion:

Result of present study suggests that out of 85 only 3 students have score of 13, indicate they clearly know how to communicate well at work. Good communication isn't easy, though, and they need to maintain their communication skill during their future clinical practice. 55 students having score of either 11 or 12 means they have to address the areas where they are failing and need to work on that area for improvement in their communication skills but rest 38% with the score of less than 11 points means they have poor communication skills in many areas. They are in need of special training course to assist them to improve their communication skills.

Present study suggests that there is difference in the communication skill of male and female but the difference is statistically not significant.

Being in medical carrier where their future clinical practice will be affected very much by their communication skill, they have to improve their communication along with their academic improvement, so that at the end of their carrier they become confident enough for better doctor- patient communication.

Thus, medical schools should assess the communication skills of entry level graduate and give special training of communication in the clinical years apart from their clinical teaching in ward and develop assessment tools to evaluate affective domain and communication skill.

We are planning to continue the same study of the same students in second and third year also so we can see the difference in communication skill during preclinical and clinical years

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10] EFFECTS OF ENVIRONMENTAL POLLUTION ON RESPIRATORY FUNCTIONS IN RESIDENTS OF AHMEDABAD CITY

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INTRODUCTION

The chief types of environmental pollution include air pollution, water pollution, soil pollution, pollution caused by solid waste and hazardous waste, and noise pollution.

During recent years, attention has been drawn to the complexity of problems of air pollution in large urban centers.

In epidemiological studies in subjects exposed to community air pollutants, pulmonary function tests (PFT) are used as screening tests as it determines their effects (Colley, Douglas and Reid, 1973).

People who are exposed to smoke, pollution and various types of occupational dust, are more prone to be respiratory patients in future. Pulmonary tuberculosis, pneumonia, bronchiectasis, pneumoconiosis, chronic obstructive pulmonary disease (COPD) and bronchial asthma are the common respiratory diseases prevalent in India. Asthma and COPD are the most common causes of death in rural India.

Kamat, Doshi and Patade (1984) analyzed the effects of air pollution in Bombay, and concluded that vehicular pollution has been associated with respiratory symptoms in people residing in metropolitan cities. Taking it into consideration, the present research project was planned to carry out in Ahmedabad city. As people who reside in the city are more exposed to environmental (air) pollution compared to the people residing quite away from the city, the study included the population from the city as well as from the remote areas of the city.

METHODOLOGY

The research was carried out in the Department of Physiology, B.J. Medical College, Ahmedabad. The subjects selected were of the residents of Ahmedabad city and nearby villages. The total number of subjects was 367 but out of that only 252 were considered for the study.

Those who were consented and convinced only were included in the current research study. All the subjects were informed the importance of the study. Their socio-demographic data was collected regarding age, sex, height, weight,

education, socio-economical status, habits, diet, occupation (past/present), type of work, exposure in polluted environment with duration, smoking history in pack/years, current smoking status, history of oxygen dependence (if any), medication (if any) for the respiratory ailments including corticosteroids use with dosing, illness history(past/present, specially regarding respiratory problems) etc. They were instructed not to drink alcohol or puff biri or cigarette for two days starting one day prior of the data collection.

Patients with evidence of Ischemic heart disease, severe or systemic arterial hypertension, neuromuscular disorder, altered thoracic cage, intermittent claudication or asteoarticular lesion in the lower extremity that could affect normal ambulation, taking glucocorticoids, Asthma were excluded from the study. Patients with an acute exacerbation in the course of the programme were also excluded from the study.

The spirometry was done by using Computerized spirometer (COSMED, KIT MICRO). The parameters studied were FVC, FEV1, FEV1/FVC, PEF, MVV, FEF25-75.

RESULTS AND DISCUSSION

There were total 367 subjects selected for the present research work. Out of these only 252 were considered as per inclusion – exclusion criteria. There were 69 females and 183 males in the present study. A control group of 40 subjects (28 males and 12 females) residing ≥ 30 kilometers away from the Ahmedabad city, not having any respiratory complaints, discomforts or dyspnea etc. and reside in villages since birth visiting city once or twice a month. The subjects for the study group were between the age ranges of 17 to 64 years, while those of control group were between the age ranges of 18 to 59 years of age.

There are tables which show symptoms of respiratory disorders found in the subjects of study group (i.e. residents of Ahmedabad city),and of respiratory parameters of such subjects.

Table 1: Sex distribution of subjects in study group and control group.

Group	Male		Female	
	Nos.	Percentage	Nos.	Percentage
Control group (n=40)	28	70	12	30
Study group (n=252)	183	72.62	69	27.38

Table 2: Distribution of subjects as per age in the present study.

Age (yrs)	Control group		Study group	
	No.	%	No.	%
15 – 20	4	10	18	7.14
21 – 30	7	17.5	44	17.46
31 - 40	11	27.5	82	32.54

41 – 50	8	20	54	21.43
51 – 60	6	15	37	14.68
61 - 70	4	10	17	6.75

Table 3: Socio-economic status of the subjects.

S-E Class	Control group		Study group	
	No.	%	No.	%
Lower	5	12.5	16	6.35
Lower-Middle	7	17.5	56	22.22
Middle	18	45	78	30.96
Upper-Middle	6	15	59	23.41
Upper	4	10	43	17.06

Lower socio-economic class of subjects has per capita of Rs. 250-500, Lower-Middle class has > Rs.500 to 1500, Middle class has > Rs.1500-2500, Upper-middle class has > Rs 2500-4000 and that of Upper class is > Rs. 4000 per month.

Table 4: Education level of subjects

Education	Control group		Study group	
	No.	%	No.	%
Primary	-	-	17	6.75
Secondary	4	10	35	13.89
Higher secondary	21	52.5	102	40.48
Graduate/Diploma	9	22.5	62	24.60
Post-graduate	4	10	31	12.30
Professional	2	5	5	1.98

Table 5: Occupation of the subjects.

Occupation	Control group		Study group	
	No.	%	No.	%
Labors	9	2.5	23	9.13
Govt. service	14	35	54	21.43
Private service	7	17.5	67	26.59
Vendor	5	12.5	64	25.40
Shopkeeper	3	15	27	10.70
Professional	2	10	17	6.75

Table 6: Height, Weight and BSA of the subjects.

Parameters	Control group		Study group	
	Mean	SD	Mean	SD
Height (cm)	161.51	5.46	157.18	6.14
Weight (Kg)	57.73	12.5	53.44	15.46
BSA	2.37	0.5	2.14	0.54

Table 7: Duration of exposure to polluted environment in residents of Ahmedabad city.

Duration (yrs)	No.	Percentage
1 – 2 years	62	24.60
2 – 5 years	57	22.62
5 – 10 years	92	36.51
> 10years	41	16.27

Table 8: Duration of Smoking and Alcohol consumption in subjects of study group.

	Duration	No.	%
Smoking	1 – 5 years	14	5.55
	> 5 years	48	19.05
Alcohol	1 – 5 years	23	9.13
	> 5 years	19	7.54

Table 9: Symptoms observed in the subjects of study group.

Symptoms	No.	%
Cough with expectoration	173	68.65
Dyspnea	167	66.26
Fever	68	26.98
Edema	9	3.57
Cyanosis	5	1.98
Chest pain	27	10.71
Hemoptysis	3	1.19

The table 9 shows that there were complaints like cough with expectorations and dyspnea which show 68.65% and 6.26% respectively in the residents of Ahmedabad city who are facing the problem of environmental pollution as they had to work or stay in such environment.

Table 10: Comparison of respiratory parameters in subjects of control group and study group.

Parameters	Control group		Study group	
	Mean	SD	Mean	SD
FVC (L)	3.16	0.46	1.93	0.52
FVC (Pred)	98.45	21.30	74.08	14.75
FEV1(L)	2.41	0.68	1.05	0.33
FEV1 (Pred)	78.92	12.36	46.8	10.9
FEV1/FVC %	81.44	11.67	53.11	14.23
FEV1/FVC% (Pred)	82.65	16.54	64.24	20.55
FEF 25-75 (L)	2.88	0.82	1.55	0.44
FEF 25-75 (Pred)	92.21	15.23	77.02	14.91
PEFR (L/Sec)	5.92	2.31	3.01	2.25
PEFR (Pred)	98.45	12.35	64.93	19.91
MVV (L/min)	102.68	35.11	42.34	24.01
MVV (Pred)	82.14	32.54	68.50	22.68

There was reduction in all the parameters of pulmonary function tests. On comparison the various PFT values showed the 'p' value less than 0.001 showing highly significant difference between the two groups.

Though this study was undertaken on limited subjects, it clearly shows the effect of environmental pollution which affects the respiratory system most.

The present study was the pilot study to find out the effect of environmental pollution on respiratory parameters in residents of developed urban areas of our country. Similar types of studies can be undertaken on large scale to categorize the effects with the levels of pollution and to find out the measures to reduce the effects of such type of pollution.

CONCLUSION

Herewith we conclude that there are definite damaging effects of environmental pollution on various systems of the body but the effects on respiratory are the most and may lead to permanent damage to the respiratory system and may lead to death. The measures to decrease the environmental pollution should be considered and implemented so that large number of people can be benefited.

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11] AQUAPORINS AT A GLANCE

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ABSTRACT

Aquaporins are proteins embedded in the cell membrane that facilitate and regulate the movement of water across cell membranes. They

are found in various cells of the body, including the kidney. They mediate

water reabsorption in the proximal tubule, and are necessary for ADH regulated water reabsorption in the collecting duct of the kidney. Diabetes insipidus, a disease characterized by polyuria is associated with defects in AQP-2 expression.

INTRODUCTION

A number of proteins are found in the cell membrane of every cell of the body. They facilitate the movement of ions and solutes both downhill (along concentration gradient) and uphill (against concentration gradient). Aquaporins are such protein channels embedded in the cell membrane, that facilitate and regulate the movement of water. They are “ the plumbing systems of the cells.”

DISCOVERY OF THE FIRST AQUAPORIN

Like a number of other great discoveries in science, aquaporins were discovered by a convoluted route in Dr. Peter Agre's laboratory at John Hopkins University, Baltimore, USA around 1989-1991. The lab had received a NIH grant to study the Rh blood group

antigen. They isolated the Rh antigen, but another protein kept appearing. It was a 28 kDa protein abundant in red blood cells and kidney tubules, and also in plant tissues. Dr. Agre consulted his hematology teacher at North Carolina University, John Parker, who suggested it may be the long sought after water channel.

Agre then conducted a decisive and elegant experiment. He introduced the newly discovered protein (now called CHIP 28 –channel like integral protein with 28kDa molecular weight), into frog oocytes and kept these oocytes in water. These cells were swollen up, while the other oocytes (with no CHIP 28) were hardly so(Fig.2). Thus, it became established that this protein was both necessary and sufficient to explain the movement of water across the red cell membrane. Agre christened it Aquaporin-1 (water pore).Subsequently, the human genome nomenclature committee has accepted the nomenclature for all similar proteins.

The pioneering discovery and research by Agre and colleagues culminated in the 2003 Nobel Prize in Chemistry being awarded to Dr. Peter Agre. In 1999, together with other research teams, Agre reported the first three dimensional structure of aquaporins viz. aquaporin-1 . (*Fig. 1 to be inserted here*).

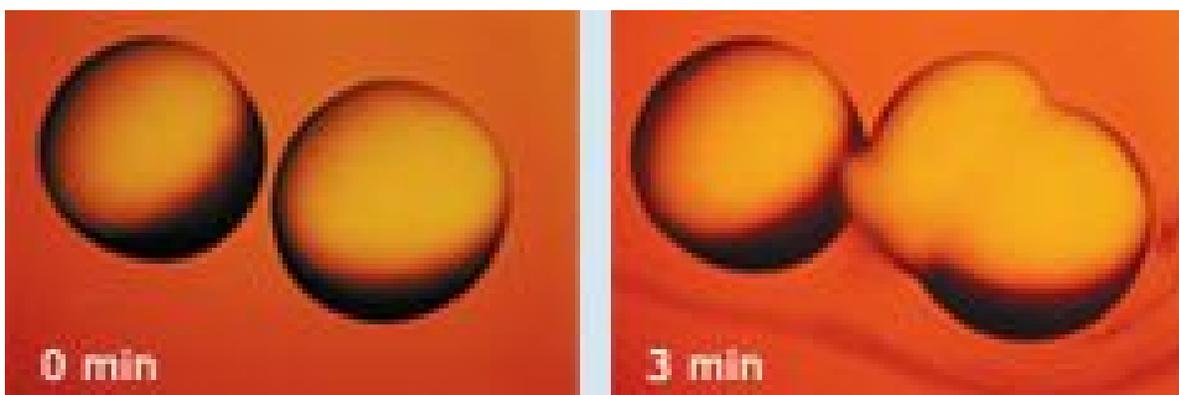


Fig. 1. Frog oocytes that contained the protein(CHIP 28, later christened AQP-1) are swollen up

(From www.nobelprize.org)

STRUCTURE OF AQUAPORINS

Aquaporins have six membrane spanning regions, both intracellular amino and carboxy terminals, and internal tandem repeats, that are due to an ancient gene duplication.

Of the five loops in AQP-1(Fig. 3), loops B and E dip into the lipid bilayer, and it has been proposed that they form 'hemichannels' that connect the leaflets to form a single aqueous pathway within a symmetrical structure that resembles an 'hourglass'.

Aquaporins form tetramers in the cell membrane, with each monomer acting as a water channel. The different aquaporins contain differences in their peptide sequence, which allows the size of the pore to differ. The resultant size of the pore directly affects what molecules pass through, with small pore sizes allowing only small molecules like water to pass through. (Fig. 3 to be inserted here).

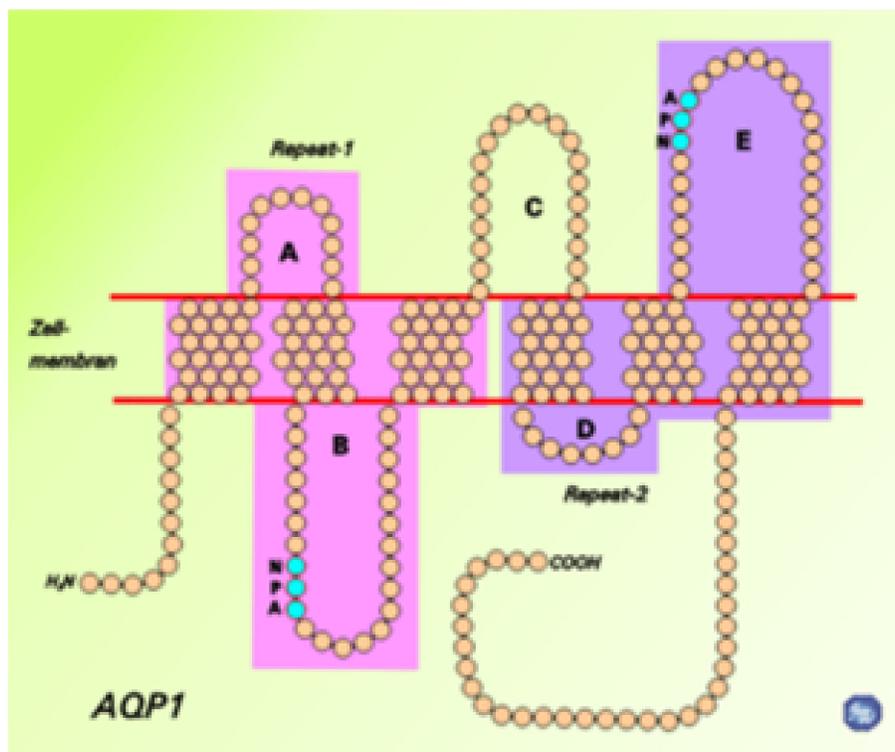


Fig.3 Structure of AQP-1

(www.wikipedia.org)

TYPES AND DISTRIBUTION OF AQUAPORINS :

The aquaporin family is divided into two groups on the basis on their permeability characteristics :

1. **The 'orthodox set' or AQUAPORINS** –permeable to water (include AQP-1, AQP-2, AQP-4, AQP-5, AQP-6, AQP-8)
 2. **The 'cocktail set' or AQUAGLYCEROPORINS** –permeable to water and small solutes, especially urea and glycerol (include AQP-3, AQP-5, AQP-7, AQP-9, AQP-10).
- AQP-1 is expressed in various cells of the body including red blood cells and kidney tubules. The permeability of the red cell membrane to water is explained by the presence of AQP-1.
 - AQP-2 is regulated by Anti-Diuretic Hormone(ADH), and is present in the distal nephron; it is also expressed in the testis.
 - AQP-3 and 4 are present constitutively on the basolateral membrane in the late distal tubule and cortical collecting duct of the kidney. In addition, AQP-4 is present in the brain and other organs.
 - AQP-6 is present in intracellular vesicles in the intercalated cell (acid secreting cell in the late distal tubule and cortical collecting duct).
 - AQP-7 & 8 are expressed in the kidney and in various tissues like testis, adipocyte, placenta, heart, etc.
 - AQP-5 & 9 are extrarenal aquaporins, expressed in various tissues of the body, but not in the kidney. *(Table 1 to be inserted here)*

Table 1. DISTRIBUTION OF AQUAPORINS IN THE BODY

AQUAPORIN	Localization in Kidney	Subcellular Distribution	Extrarenal Distribution
RENAL AQUAPORINS			
Aquaporin-1	Proximal convoluted tubule, descending thin limb	Apical membrane, Basolateral membrane	Multiple organs
Aquaporin-2	Principal cell in late distal tubule and cortical collecting duct	Apical membrane, Intracellular vesicles	Testis
Aquaporin-3	Principal cell in the late distal tubule and cortical collecting duct	Basolateral Membrane	Multiple organs
Aquaporin-4	Principal cell in the late distal tubule and cortical collecting duct	Basolateral membrane	Brain and multiple organs
Aquaporin-6	Intercalated cell	Intracellular vesicles	?
Aquaporin-7	Proximal tubule	Apical membrane	Testis, adipocyte
Aquaporin -8	Cortex, medulla	Intracellular vesicles	Testis, epididymis, pancreas, liver, colon, heart, placenta
EXTRARENAL AQUAPORINS			
Aquaporin-5		Apical membrane, Intracellular vesicles	Salivary glands, Lungs, eye

Aquaporin-9		Apical membrane	Liver, leucocytes, brain, spleen, lung, epididymis, testis
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ROLE OF AQUAPORINS IN THE KIDNEY :

Aquaporins expressed in the kidney are AQP-1, AQP-2, AQP-3, AQP-4, AQP-6, AQP-7 & AQP-8 (Fig. 4). An overview of their role in the kidney is discussed below : (*Fig. 4 to be inserted here*)

1. AQP-1

AQP-1 is expressed in the proximal convoluted tubule and descending thin limb of the nephron. At both these sites, it is present both on the apical membrane (the side facing towards the lumen) and basolateral membrane (the side facing towards the interstitium).

- ✓ In the proximal tubule, AQP-1 mediates transcellular reabsorption of water. About 67% of the filtered water is reabsorbed in the proximal tubule; this is accomplished due to the presence of AQP-1.
- ✓ The descending thin limb is freely permeable to water just like a sieve. It participates in the process of forming a concentrated urine through the operation of the countercurrent multiplier system. This function is facilitated by the presence of AQP-1.

2. AQP-2, 3 & 4 and the role of ADH :

AQP-2 is expressed on the apical membrane of the principal cell in the late distal tubule and cortical collecting duct, on stimulation by Anti-Diuretic Hormone (ADH). An increase in extracellular fluid osmolarity (solute concentration) stimulates the release of

ADH from the posterior pituitary. ADH acts on the V2 receptor (vasopressin receptor, type 2) ; the resultant activation of the adenylyl-cyclase-cAMP system results in the insertion of AQP-2 water channels on the apical membrane of the principal cell . AQP-3 & 4 are always present on the basolateral membrane. Thus a pathway is created for the passage of water- water entering the cell through the apical AQP-2 leaves the cell through the basolateral AQP-3 & 4. This reabsorption of water resets the extracellular fluid osmolarity.

3. AQP-6 :

AQP-6 is present in the intercalated cell in the cortical and medullary collecting duct. It is almost exclusively present in intracellular vesicles, with no expression in the plasma membrane. It is thus, an internal ion channel.

4. AQP-7, 8 :

- AQP-7 is present abundantly in spermatocytes. In the kidney, it is present in the brush border (apical side) of the proximal tubule.
- Although the exact function of AQP-8 is not known, it is present in intracellular domains in the proximal tubule and the collecting duct. It is also abundant in many other tissues.

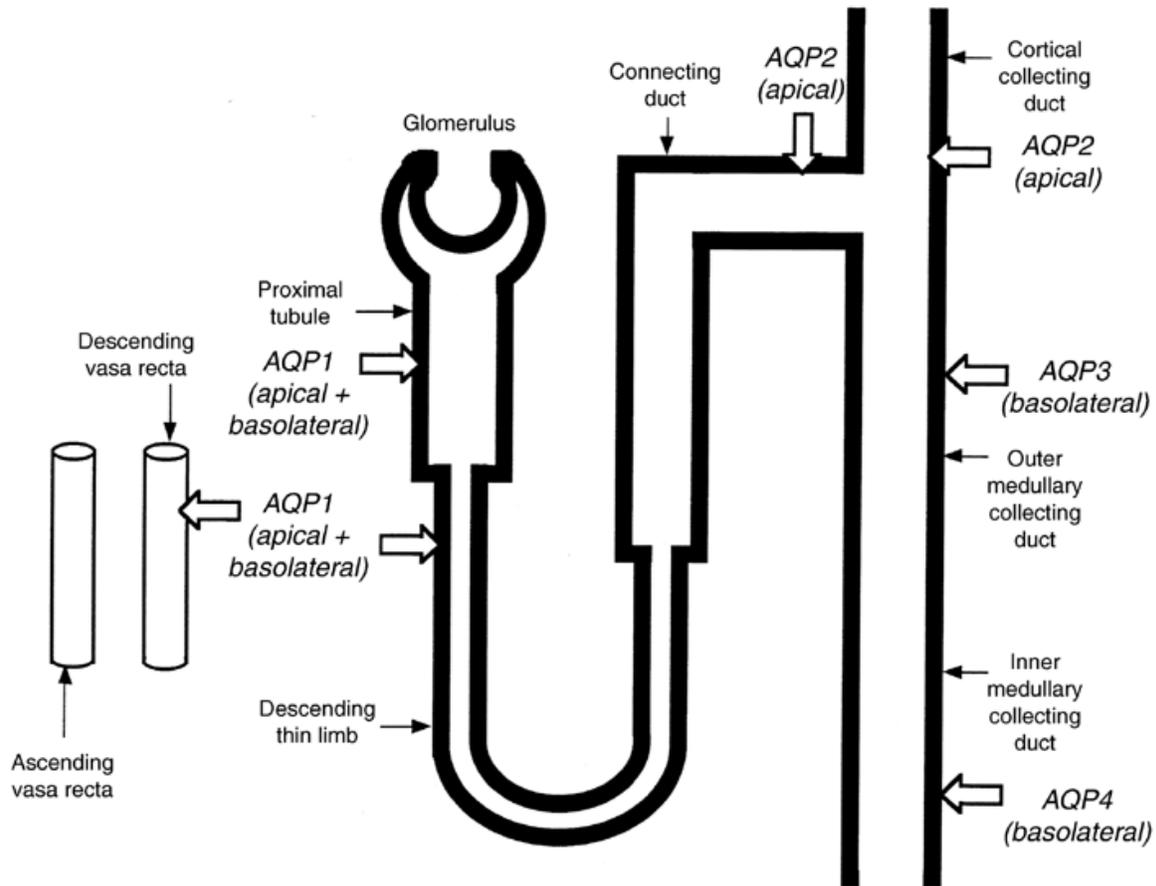


Fig. 4. Aquaporins in the kidney

AQUAPORINS AND DISEASE :

1. DIABETES INSIPIDUS

There are two significant forms of diabetes insipidus : central and nephrogenic.

- ✓ Central (neurogenic) DI is characterized by a defect in vasopressin production or release. This form of DI is rarely hereditary ; it occurs as a consequence of head trauma or disease in the hypothalamus or pituitary.

In experimental animals(rats) with central DI, decreased AQP-2 expression in the apical membrane has been demonstrated.

- ✓ Nephrogenic DI is characterized by an inability of the kidneys to respond to vasopressin stimulation. The most common hereditary form occurs due to a mutation in the V2 receptor. It is an autosomal recessive condition, localized on the X chromosome. AQP-2 trafficking to the apical plasma membrane is impaired as a result of this mutation.
- ✓ Acquired nephrogenic DI occurs commonly after lithium therapy. Lithium is administered for the treatment of bipolar mood disorder (manic depressive psychosis). Lithium induced nephrogenic DI is characterized by decreased expression of AQP-2 in the apical plasma membrane.

2. CHRONIC HEART FAILURE

Severe chronic heart failure is characterized by defects in renal handling of water and sodium resulting in extracellular fluid expansion and hyponatremia.

In experimental rats with congestive heart failure (CHF), an increase in the abundance of AQP-2 water channels in the collecting duct principal cells and increased expression of AQP-2 in the apical plasma membrane of these cells

has been demonstrated.

CONCLUSION

The discovery of aquaporins by Agre and colleagues has allowed enormous progress into the understanding of how water is transported across the biological membranes and epithelial cells at the molecular level. It has also offered tremendous insight into how renal water handling occurs at the physiological level and in various disease states associated with severe derangement of body water balance.

Future research will focus on understanding the molecular mechanisms of aquaporin action, identifying novel aquaporins and defining the role of each aquaporin in physiological and pathological states.

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12] ROLE OF PRANAYAMA IN MENOPAUSE

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Menopause means permanent cessation of menstruation at the end of reproductive life due to loss of ovarian follicular activity. It normally occurs between age of 45 to 55 years. Manifestation of Menopause may be Vasomotor (hot flush), Genital and Urinary, Psychological and there is other Health hazards. Psychological symptoms include Anxiety, Headache, Insomnia, Irritability, Depression, Dementia, Mood swing and Inability to concentrate. What is required for better life is Nutrition, which includes Balanced diet and Supplementary minerals like Ca⁺², Fe⁺², Health education regarding body Physiology, not pathology and Psychological relaxation

What is Pranayam : Pranayam comes from the following words: Prana - "life force" or "life energy" and Ayama - "expansion", "non-restraint", or "extension" . Pranayama is when this self-energizing force embraces the body with extension, expansion and control. Pranayama is one of the Principles of Yoga. It literally means "control of breath". Pranayama is a set of different exercises that involves controlling one's breath based on the four stages of breathing, particularly the two pause stages. These breathing Techniques or Pranayama are designed to allow the free flow of energy in the body and to purify the body's energy channels called nadis. The practice of Pranayama also ensures that every cell in the body receives oxygen and nutrients.

Breathing is divided in to four Stages: **1.** Inhalation or Puraka **2.** Full Pause or Abhyantara Kumbhaka (Pause After Inhaling) Full Pause **3.** Exhalation or Rechaka **4.** Empty Pause or Bahya Kumbhaka (Pause After Exhaling)

Breathing is important for two basic reasons. It is the only means of supplying our bodies and its various organs with oxygen which is vital for our survival and Breathing is one of the ways to get rid of waste products and toxins from our body.

Why Oxygen is so vital?

- Oxygen is the most vital nutrient in our bodies.

- It is essential for the proper and efficient functioning of the brain, nerves, Glands and other internal organs.
 - We can survive without food for weeks and without water for days, but without oxygen we will die within a few minutes.
 - If the brain does not get proper supply of this essential nutrient, it will cause degradation of all the vital organs of the body.
 - The brain requires more oxygen than any other organ. If it doesn't get enough, the result is mental sluggishness, negative thoughts, depression and, eventually, vision and hearing declines.
- Oxygen supply in our body, however, declines as we get older and if we live a poor lifestyle.

Oxygen purifies the blood stream

- One of the major secrets of energy and rejuvenation is a purified blood stream. The quickest and most effective way to purify the blood stream is by taking in extra supplies of oxygen from the air we breathe. The Breathing Exercises described in this website are the most effective methods ever devised for saturating the blood with extra oxygen. So here are a few things about what oxygen do to our body:
- Oxygen burns up the waste products (toxins) in the body, as well as recharges the body's batteries (the solar plexus).
- Most of our energy requirements come, not from food, but from the air we breathe. By purifying the blood stream, every part of the body benefits, as well as the mind. Rejuvenation of the skin will start.
- Scientists have discovered that the chemical basis of energy production in the body is a chemical called Adenosine Triphosphate (ATP). If something goes wrong with the production of ATP, the result is lowered vitality, disease and premature ageing. Scientists have also discovered that oxygen is critical for the production of ATP; in fact, it is in fact its most vital component. The work done at Baylor University in the USA has shown that you can reverse Arterial Disease in monkeys by infusing oxygen into the diseased arteries. Yoga permits us to tap into this vital nutrient.

Why Pranayam ?

Way We Breathe is wrong :

- Our breathing is too shallow and too quick. We are not taking in sufficient oxygen and we are not eliminating sufficient carbon dioxide. As a result, our bodies are oxygen starved, and a toxic build-up occurs. Every cell in the body requires oxygen and our level of vitality is just a product of the health of all the cells.
- Shallow breathing does not exercise the lungs enough, so they lose some of their function, causing a further reduction in vitality. Animals which breathe slowly live the longest; the elephant is a good example. We need to breathe more slowly and deeply.
- Quick shallow breathing results in oxygen starvation which leads to reduced vitality, premature ageing, poor immune system and a myriad of other factors.

The Nadis

- The Nadis are nerve channels or tubes in the astral body through which the Prana flows. Asanas and Pranayamas are designed to purify the Nadis for the Prana to flow freely. If the Nadis are blocked, the Prana cannot flow easily and freely and results to poor health. According to Ancient Yogis, there are about two thousand Nadis. Of all these Nadis, the most important is the Sushumna.
- The function of the Sushumna can be compared to the functions of the Spinal Cord in the physical body. On either side of the Sushumna are two other Nadis called the Ida and the Pingala which correspond to the sympathetic ganglia of the Spinal Cord as shown in the cross-section of the spinal vertebra. Kundalini, which is a dormant or static energy and is depicted as a coiled snake, is located at the base of the Sushumna in the Muladhara Chakra. This energy is awakened by the practice of Pranayama and other Yogic Practices

Important during menopause

- Particularly important during menopause as they have a powerful effect on the neuroendocrine system, allowing fresh, oxygenated blood to flow to the glands
- It reduces the effects of menopause's hormonal changes by balancing the endocrine system. It smoothes out the hormonal and glandular changes that take place during this stage of life. Yogis believe that the breath and the mind are interdependent entities. That is, if one's breath is under control, then so is his mind.
- Our state of mind is very important because our emotions, reactions, and everything else that is needed to live a productive life depends on it. The practice of Pranayama partly aims to bring the mind to a state of peace, which is essential to living a good life.

Thus, Pranayama offers a better self-control. Through concentration, one can better handle temper and reactions. Mind can function clearly, avoiding arguments and wrong decisions. Moreover, self-control also involves control over one's physical body. Pranayama develops our concentration and focus. It fights away stress and relaxes the body. Controlling one's breathing also results to serenity and peace of mind. Pranayama leads to spiritual journey through a relaxed body and mind.

13] UNRAVELLING THE STOMACH- A HISTORICAL PERSPECTIVE

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ANCIENT VIEWS ON STOMACH & DIGESTION

- The Greek physicians considered heat to be the principal agent in digestion. Galen (in the first century AD) described a process of concoction or heating within the stomach “like a lot of burning hearths around a great cauldron”. This heating of the food was thought to convert it

into chyle, then into the four humours - blood, phlegm, yellow and black bile - before it was assimilated into the body.

- The Swiss physician, Paracelsus in the 16th century, described the stomach as a chemical laboratory within the body, and suggested that there was an agent in the stomachs of certain animals which allowed them to digest bones and small animals. Most physicians however, rejected this proposition and stayed with the age-old humoral account of digestion.

WILLIAM BEAUMONT & THE ORIGINS OF MODERN GASTROENTEROLOGY

In 1822 William Beaumont, an American army surgeon stationed at Mackinac Island in northern Michigan, USA was called to treat a French-Canadian guide, Alexis St. Martin, who had a gunshot wound on the abdomen. Beaumont saved St. Martin's life and nursed him to health. The wound healed but left a permanent gastric fistula in the man's side. "When he lies on the opposite side, I can look directly into the cavity of the stomach, and almost see the process of digestion".



For over eight years Beaumont carried out a series of experiments and observations on the effects of certain foods on the stomach of his patient. They resulted in the isolation of the hydrochloric acid from the stomach juice, the discovery of the connection between the stomach secretion and emotional changes and the first attempt of describing of the stomach motility. His book titled "EXPERIMENTS & OBSERVATIONS ON THE GASTRIC JUICE & THE PHYSIOLOGY OF DIGESTION" was a breakthrough work in the field of experimental gastrology.

HEIDENHAIN'S POUCH & THE STOMACH CELLS

Heidenhain, an eminent German physiologist in the second half of the nineteenth century studied the stomach. Heidenhain prepared a denervated pouch (with vagus nerve cut) called the HEIDENHAIN'S POUCH to study stomach secretions. Examining the gastric secretion in 1878 he found and described three types of cells

in gastric mucosa: chief or zymogenic cells which release pepsin, parietal cells secreting the hydrochloric acid and epithelial cells.

IVAN PAVLOV'S CLASSICAL EXPERIMENTS

- In 1897 Pavlov worked out an original surgery technique allowing the isolation of a part of the stomach, saving not only blood supply but also with innervation. Thanks to that it was possible to investigate functional changes in the stomach under different nerve stimuli. The model was christened "Pavlov's pouch". This model with an oesophageal fistula enabled the study of the role of the higher centres in stomach secretion. Thus, Pavlov was the first to demonstrate the cephalic phase of gastric secretion.
- Pavlov studied intestinal secretions, demonstrated that it contained an enzyme that activated proteolytic agents in the pancreatic juice and coined the term 'enterokinase'.
- Pavlov's greatest contribution was his demonstration of the role of the nervous system on stomach and pancreatic secretions.

For his contributions Ivan Pavlov was awarded the first Nobel Prize in Physiology in 1904.

THE STORY OF GASTRIN & HISTAMINE

Edkins discovered gastrin in 1905, stating to the Royal Society that "in the process of the absorption of digested food in the stomach a substance may be separated from the cells of the mucous membrane which, passing into the blood or lymph, later stimulates the secretory cells of the stomach to functional activity." This discovery was subsequent to the discovery of secretin by Bayliss and Starling in 1902.

For years, there prevailed a controversy about the existence of gastrin. The debate intensified, when in 1920, a Polish physiologist, Leon Popielski discovered that histamine stimulated gastric acid secretion. Popielski was opposed to the 'hormonal theory' and Edkins' view of the stomach secretin (gastrin). The confusion cleared in 1938 when Komarov demonstrated that there were two separate secretagogues in the stomach mucosa. The controversy settled in 1964, when Roderic Greogry, professor of Physiology at Liverpool, published the amino acid structure of gastrin. This was the final confirmation that gastrin in pure form was a potent stimulant of gastric acid secretion.

THE CONTRIBUTIONS OF HORACE DAVENPORT

Horace Davenport, Professor of Physiology at the University of Michigan, Ann Arbor, USA, demonstrated the role of carbonic anhydrase on gastric acid secretion. This offered new insight into the operation of the parietal cell and subsequently, laid the foundations of the modern treatment of peptic ulcer disease. Davenport was the first person to demonstrate that aspirin and bile salts damaged the gastric mucosa.

VAGOTOMY AS A TREATMENT FOR PEPTIC ULCER

Andre Latarjet gave a detailed account of the vegetative innervation of the stomach. He studied the role of acetylcholine in stimulating acid secretion. In

1923, Latarjet performed a local vagotomy, limited to the lesser curvature, and demonstrated a significant decrease in acid secretion. Twenty years later in Merritt Billings Hospital in Chicago L. Dragstedt showed clinically proved results of his own study on the significance of vagotomy for the hydrochloric acid secretion and etiopathogenesis of the stomach ulcer disease.

HISTAMINE RECEPTOR ANTAGONISTS

Histamine -2 receptors (H₂) were discovered by J.Black in 1972, and their antagonists were introduced in treatment in 1976. For his work , Black was awarded the Nobel Prize in 1988.

HELICOBACTER PYLORI & REVOLUTION IN PEPTIC ULCER TREATMENT

In 1981, Robby Warren, a pathologist at the Royal Perth Hospital, found spiral bacteria in biopsies of the gastric mucosa. These patients also had inflammation in the mucosa. He worked on this subject with Barren Marshall, a physician in training at the same hospital. Marshall continued research, developed therapy for the eradication of the bacteria (now named Helicobacter Pylori), even successfully treated his own peptic ulcer disease with the therapy. As Marshall treated scores of desperate patients in Australia and abroad, he was convinced that his line of treatment could forever revolutionize the treatment of peptic ulcer

In 1994, the National Institute of Health,USA adopted a resolution to the effect that detection and eradication of H. pylori was the key to the treatment of gastric and duodenal ulcer patients. This was the culmination of a decade of intense research by Barry Marshall and his colleague at Royal Perth Hospital, Robin Warren.

For their pathbreaking contribution, Marshall and Warren were awarded the Nobel Prize in Physiology or Medicine in 2005.

Thus, goes the story of the stomach; long and arduous, yet inspiring legendary scientists to unravel it.

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Abstract

Arterial pulses are relevant anatomic landmarks for some of frequently used regional anesthetic blocks both for surgical procedures and pain therapy. The superficially situated arteries are also clinically important for various diseases. We palpated different arteries in fifty persons (25 male and 25 female). We tried to describe accurate anatomical site of palpation of pulsation for different arteries in our body.

Introduction

Pulse (disambiguation): In medicine, a person's **pulse** is the throbbing of their arteries. The pulsation of an artery produced by the rise and falls in blood pressure as the heart goes into systole and diastole. It can be observed clinically by palpation at any place that allows for an artery to be compressed against a bone, such as at the neck (carotid artery), at the wrist (radial artery), behind the knee (popliteal artery), on the inside of the elbow (brachial artery), and near the ankle joint (posterior tibial artery).

A normal pulse rate for a healthy adult, while resting, can range from 60 to 100 beats per minute (BPM), although well-conditioned athletes may have a healthy pulse rate lower than 60 BPM. Bradycardia occurs when the pulse rate is below 60 per minute, whereas tachycardia occurs when the rate is above 100 BPM. During sleep, the pulse can drop to as low as 40 BPM; during strenuous exercise, it can rise as high as 150–200 BPM. Generally, pulse rates are higher (130 BPM) in infants and young children. The resting heart rate for an infant is usually close to an adult's pulse rate during strenuous exercise (average 110 BPM for an infant). The pulse rate can also be measured by measuring the heart beats directly (the apical pulse).

In most people, the pulse is an accurate measure of heart rate. Under certain circumstances, including arrhythmias, some of the heart beats are ineffective, and the aorta is not stretched enough to create a palpable pressure wave. The pulse is too irregular and the heart rate can be (much) higher than the pulse rate. In this case, the heart rate should be determined by auscultation of the heart apex, in which case it is not the pulse. The **pulse deficit** (difference between

heart beats and pulsations at the periphery) should be determined by simultaneous palpation at the radial artery and auscultation at the heart apex. A collapsing pulse is a sign of hyperdynamic circulation.

Mechanism of generation of pulse wave

Pressure waves move along the artery walls, which are pliable; these waves are not caused by the forward movement of the blood itself, however. When the heart contracts, blood is ejected into the aorta and the aorta stretches. At this point, the wave of distention (**pulse wave**) is pronounced but relatively slow-moving (3–6 m/s). As it travels towards the peripheral blood vessels, it gradually diminishes and becomes faster. In the large arterial branches, its velocity is 7–10 m/s; in the small arteries, it is 15–35 m/s. The pressure pulse is transmitted fifteen or more times more rapidly than the blood flow.

Scale for measuring peripheral pulse volume

- ❖ +0 = absent or not discernible
- ❖ +1 = thready, weak, difficult to feel
- ❖ +2 = normal, detected readily, obliterated by strong pressure
- ❖ +3 = bounding, difficult to obliterate

Reading a pulse

Pulses are manually palpated with fingers. When palpating the carotid artery, the femoral artery or the brachial artery, the thumb may be used. However, the thumb has its own pulse which can interfere with detecting the patient's pulse at other points, where two or three fingers should be used. Fingers or the thumb must be placed near an artery and pressed gently against a firm structure, usually a bone, in order to feel the pulse. The size of the lumen of an artery and its distance from the skin surface determine if a particular artery can be felt with the palpating finger.

To obtain a reasonably accurate resting pulse rate, make sure the person is calm and has been resting for 5 minutes before reading the pulse. Bear in mind that any stimulants, taken prior to the reading will affect the rate (such as caffeine or nicotine). Put the index and middle fingers over the pulse count, and count for 30 seconds, and afterwards multiply by 2, to get the pulse rate. If the person's pulse rate is irregular, count for a full minute, and do not multiply. Averaging multiple readings may give a more representative figure. Home blood pressure measurement devices also typically give a pulse reading, as do portable pulse oximeters, now more commonly available to such people as flyers and sufferers of COPD.

Anatomy: common pulse sites and relations of artery

Palpation of Upper Limb Arterial Pulses - In the upper limb, axillary, brachial, radial and ulnar arteries may all be felt in one or more parts of their course. The ability to palpate the pulse in three of these is of major clinical significance.

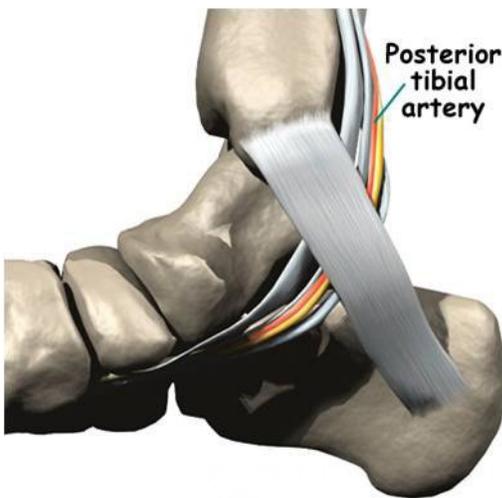
- The **Axillary artery pulse** can be felt in the lateral wall of the axilla, where the artery lies against the shaft of humerus. Because of axillary fat, pulsation are much deeper in position. Axillary artery in this region is also related to the coracobrachialis, median nerve, ulnar nerve, radial nerve and axillary vein.
- The **brachial pulse** can be palpated by firm pressure along most of its course. The brachial artery is wholly superficial, covered anteriorly only by skin and superficial fascia and deep fascia. In the upper arm, pressing it laterally against the humerus in the bicipital groove; in the lower part of the arm, pressing it posteriorly against the humerus. It is best felt in the middle of the arm, by pressing it laterally. It is located between the biceps and triceps, on the medial side of the elbow cavity, frequently used in place of carotid pulse in infants (brachial artery). The brachial artery is the one usually utilized in determining the blood pressure.
- The **radial pulse** is best felt lateral to the tendon of F.C.R. at the wrist, and also in the anatomical snuff box. At the wrist, it lies over pronator quadratus and the lower end of radius where its pulsations are most accessible. At the anatomical snuff box it lies against scaphoid and trapezium bones. The former is the pulse usually felt in routine physical examination.
- The **ulnar pulse** can be palpated at the wrist where, it lies over flexor digitorum profundus muscle between flexor carpi ulnaris medially and flexor digitorum superficialis laterally.

Palpation of Lower Limb Arterial Pulses - You should now palpate the pulses of the major arteries of the lower limb. The practical application of this technique will be used frequently during your future clinical practice in order to detect any disturbance in blood flow in the lower limbs from peripheral vascular disease.

- The **femoral pulse** can be felt by pressing directly backward at the midpoint between the anterior superior iliac spine and the pubic symphysis. Here, it is lying against ilio-pubic eminence from which it is separated only by psoas tendon. It is best felt when the thigh is flexed, abducted and laterally rotated.



- The **popliteal pulse** can be detected when the knee is passively flexed approximately at 40° - 50° and pressure exerted forwards by the fingers of each hand against the posterior aspect of the tibia in lower part of popliteal fossa. The popliteal artery is lying over popliteal surface of femur, intercondylar notch and popliteus muscle from above downwards. The popliteal pulse is not always easily felt because it is deepest structure among tibial nerve, popliteal vein and popliteal artery. The **popliteal artery used to measure blood pressure from lower limb.**
- The **posterior tibial pulse** is palpable midway between the medial malleolus and the heel. The posterior tibial artery lies deep to the flexor retinaculum and abductor hallucis muscle and superficial to the medial surface of calcaneum.



- The **Dorsalis pedis pulse** is palpable from the midpoint between the malleoli to the proximal end of the first inter-metatarsal space against navicular. The dorsalis pedis artery lies between the extensor hallucis longus tendon medially and extensor digitorum longus laterally against talus and navicular bone.

Palpation of Head and neck Arterial Pulses -

- The **subclavian pulse** can be felt in the angle between the medial end of the clavicle and the sternomastoid muscle. Using firm but gentle pressure behind the clavicle, the pulse can be felt by deep palpation of the artery against the superior surface of the first rib opposite the midpoint of the clavicle. This is of clinical significance, since compression of the artery downwards against the first rib can reduced uncontrolled bleeding from the axilla and arm following trauma.
- The **Carotid pulse** is located in the neck, the carotid artery should be palpated gently and while the patient is sitting or lying down. Stimulating its baroreceptors with vigorous palpitation can provoke severe bradycardia or even stop the heart in some sensitive persons (Carotid sinus syndrome). Also, a person's two carotid arteries should not be palpated at the same time. Doing so may limit the flow of blood to the head, possibly leading to fainting or brain ischemia. It can be felt between the anterior border of the sterno-cleido-mastoid muscle, above the hyoid bone and lateral to the thyroid cartilage.
- The **Facial pulse**: The facial artery is located on the mandible at the antero-inferior angle of masseter muscle along a line with the corners of the mouth. During clenching of teeth facial artery can be felt at the antero-inferior angle of contracted masseter muscle. The facial artery is also called anesthetists artery as anesthetists stands on head side of patient during surgery, can readily access facial artery.
- The **Temporal pulse**: The superficial temporal artery is located on the temple directly in front of the ear where it emerges from the base of parotid gland. Here, it lies over the zygomatic process of the temporal bone.

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For individuals with COPD in whom emphysema is a major component, the elastic tissue in the alveolar and capillary walls is progressively destroyed, which results in increased lung compliance and decreased elastic recoil. This produces air trapping and increase RV, FRC and TLC. These increases in lung volumes increases work of breathing by stretching the respiratory muscles and decreases their efficiency.

In chronic bronchitis, accumulation of mucus and airway inflammation cause premature airway closure and increases in RV, FRC and TLC. Airway resistance and work of breathing are increased but lung compliance is normal.

Resistance to airflow is the change in pressure per unit flow. Airway Resistance varies with the increase of the fourth power of radius of the alveoli. The major site of airway resistance is the first eight airway generations.

Pulmonary function tests- Spirometry, flow-volume loop, body plethysmography can detect abnormalities in lung function before individual becomes symptomatic. The results are compared with with results obtained in normal individuals and vary with gender, ethnicity, age and height. COPD is characterized by increase in lung volumes and airway resistance and by decrease in expiratory flow rate.

Changes in the mechanical properties of the lung or chest wall or both in the presence of disease results in an increase in the work of breathing. The work of breathing is calculated by multiplying the change in volume by the pressure exerted across the respiratory system.

$$\text{Work of breathing (w)} = \text{Pressure (p)} \cdot \text{change in volume (v)}$$

Patterns of abnormalities in PFT results

	Pulmonary function measurement	Obstructive pulmonary disease	Restrictive lung disease
1	FVC (L)	Decreased	Decreased
2	FEV1 (L)	Decreased	Decreased
3	FEV1 / FVC	Decreased	Normal
4	PEFR	Decreased	Normal
5	FEF 50 (L/SEC)	Decreased	Normal
6	Slp of FV curve	Decreased	Normal to increased

CASE REPORTS

16] A CASE OF BILATERAL RENAL AGENESIS

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An abortus of four and a half months gestational age was submitted to autopsy examination. Mother's age was 30 years, second gravida and second para, first child is normal (FTND) and alive at 3 years of age without any significant health problems.

On Gross Findings :-

Both kidneys were absent and in their place was present some unidentifiable tissue, absent ureters, bladder present, both lungs present, liver size according to age.

No gross anomaly in any of the organs developed at four and a half months of gestation.

Sections from unidentifiable tissue, attached to the liver were taken and stained by H & E stain.

FINDINGS IN THE SLIDE

Undifferentiated embryonal cells without any evidence of pattern formation are seen. Overall gross and histological findings are consistent with the presumptive diagnosis of renal agenesis with pulmonary hypoplasia and no other organ malformation.

Renal agenesis will result in oligohydramnios because amniotic fluid is mainly derived from fetal urine.

It is an example of a deformation sequence in which an anomaly i.e. – the lack of normal kidneys, leads to lack of fetal urine output which results in oligohydramnios that causes deformation through constraint.

The most serious consequence of oligohydramnios is pulmonary hypoplasia. These are extremely small lungs on each side of the heart in middle of the chest.

Microscopic examination of the lung reveals no alveolar development.

Only tubular bronchioles incapable of significant gas exchange, in the baby with oligohydramnios & pulmonary hypoplasia.

The baby, demonstrates the typical potter's facies, with prominent infraorbital folds, resulting from oligohydramnios in utero.

Description :

Bilateral renal agenesis is invariably fatal. Unilateral renal agenesis is invariably fatal. It may be symptomatic and often incidentally diagnosed by abdominal ultrasound or computed tomography (CT) scan secondary to another condition.

In infants with unilateral renal agenesis, the remaining kidney may be enlarged & there is increased risk of problems with the remaining kidney.

It has been associated with chromosomal abnormalities like trisomy 22, 7, 10, 45 etc.

It can be presently detected by ultrasound where elective termination may reduce the birth prevalence of renal agenesis (Stool et. Al – 1995a, 1995b)

Embryogenesis :

The metanephric buds, which begin to develop into kidneys, in 5th week of gestation, fail to develop, renal agenesis results.

Following factors are responsible for renal agenesis :-

- (1) Increases with low birth weight
- (2) Prematurity
- (3) Intrauterine growth retardation
- (4) Multiple gestation pregnancies
- (5) Maternal alcohol consumption
- (6) Maternal smoking.

Discussion :

Due to severe oligohydramnios, there is compression of the foetus with resultant heart failure & or severe pulmonary insufficiency after prolonged inability to expand & mature the alveolar tree.

VACTERAL malformation may be there. But, this is not a case of VACTERAL.

- V - (Vertebral / vascular malformation)
- A - Imperforate anus
- C - Cardiac malformation
- TE - Trachco – esophageal fistula
- R - Renal or rib malformation
- L - Limb anomalies s

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