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THE CLINICO- ANATOMICAL ASPECT OF BASTI KARMA

M. KHARE*

Declaration

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Abstract

Basti a form of bio purification is administered into rectum for its action on large bowel. Basti is claimed be useful in various nervous system related disorders. Enteric Nervous System is a collection of neurons in the G.I.T. constituting brain of Gut. Apart from its influence on G.I.T., ENS Also influences the ANS thereby producing systemic effects. In view of the recent information described above about the structural and functional entity of an ENS a minibrain of the gut, the ancient wisdom of Ayurveda considering the pakwashaya as the seat of Vata system and the provision of basti therapy as the major systemic therapy for nervine system appear interesting and prompt open newer area for future research on ENS. Biomedical research should concentrate to evaluate the effect of Basti on ENS

Key Words: Basti, Enteric nervous system, Gut Brain

Introduction

A medication administered by the enema for desired therapeutic effects is known as Basti therapy. According to Ayurveda Vata is the main morbid factor in the causation of diseases pertaining to tissues and organs in the body. Since Vata is also the physiological force behind the functions of elimination or retention of faeces, urine, bile and other extractables in their respective sites and Basti therapy is the best treatment of excessive excited Vata, therefore Basti karma is considered half the treatment of all the diseases described in Ayurveda. All the functions of nervous system in human being are represented through Vata in Ayurveda. A separate chapter has been devoted in Charaka Samhita to explain its importance [1]

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Action of Basti

The drug prepared according to classical reference is administered through rectal canal which reaches upto nabhi Pradesh, Kati, Parshwa, Parshwa ,kukshi. It churns the accumulated Dosha and Purisha spreads the unctuousness (potency of the drugs) all over the body and easily comes out along with the churned purisha and Doshas is called Basti [2]

According to modern science enema is the procedure in which any liquid preparation is introduced through rectum by means of adequate instruments as liquid or gas into the rectum.

Explanation

Although it is not right to crudely compare the Vatai system of Ayurveda with Nervous system as known as conventional modern medicine, but it can be stated that most of the neuroimpulsive activities of the living body are the attributes of Vata system, Pakwashaya i.e. colon is considered as the principal seat of Vatai and Basti karma are the specific therapy for rectification of Vata dosha. Thus according to Ayurveda, the gut is the most important part of the body which governs the functions of the entire body.

The gut has a mind of its own, the *enteric nervous system.* Just like the larger brain in the head, researchers say, this system sends and receives impulses, records experiences and respond to emotions. Its nerve cells are bathed and influenced by the same neurotransmitters. The gut can upset the brain just as the brain can upset the gut. The gut's brain or the "enteric nervous system" is located in the sheaths of tissue lining the esophagus, stomach, small intestine and colon. Considered a single entity, it is a network of neurons, neurotransmitters and proteins that zap messages between neurons, support cells like those found in the brain proper and a complex circuitry that enables it to act independently [3]

The enteric nervous system consist of motor and sensory neurons and their support cells, which form two interconnected plexuses, the myenteric and submucous nerve plexuses, within the walls of the gastrointestinal tract. Each of these plexuses is formed by

- Ganglia which house the nerve cell bodies and associated cells ; and
- Bundles of nerve fibers, which pass between ganglia and from the ganglia into surrounding tissues.

The myenteric plexus extends entire length of the gut and lies between logitudnal and circular layers of gut muscle. It essentially provides motor supply to the two layers of muscles as well as the secretomotor innervation to the mucosa besides numerous projections to the submucosal ganglia of the gall bladder and pancreas and to the sympathetic ganglia. The submucous plexus is located in the submucosa between circular muscle and the muscularis mucosa. It is most developed in small intestine and plays important role in secretory control [4] Neurons in the enteric system are derived from neural crest cells that migrate to the cranial portion of the gut and subsequently move caudally to populate the entire G.I.T [5]

Thus the ENS is increasingly recognized as having a central role in the physiologic and pathophysiologic features of the G.I.T.

Fate of Basti

When the rectal enema is given by means of a syringe it is deposited just within the sphincter of the anus, a portion of the rectum i.e. normally very tolerant of sudden distention. It is the irritability, which is responsible for prompt evacuation of any faecal matter that arrives in this part of the bowel. But when enema is administered very slowly, it suppresses evacuation reflex and reaches to the upper part of the colon which is not only more retentive but also more absorptive than rectum.

After drug passes the anal sphincter, will pass easily upto sigmoid and descending colon, across and down the caecum regardless of the position of the body of the patient.

Basti dravyas when introduced through rectum reach upto level of nabhi, kati and udar Pradesha and produces cleansing effect. It spreads throughout the body just as the water supplied to the root of the tree spreads whole of tree [6]

The doshas present throughout the body enters basti through its veerya just like the water from the earth is absorbed by the sun [7]

Thus the absorption of basti dravya is not expected. It is possible that virya of basti dravya spreads through Enteric nervous system and expels out vitiated doshas from the body. Even in Ayurvedic literature it is told that basti dravya spreads throughout the body with the help of Apan, Udan and Saman vayu [8] Gut brain(ENS) integrates sensor information from mucosal receptor and organizes and appropriate motor response form a choice of predetermined programmes. So enteric nervous system of gut brain is an independent integrative system with structural and functional properties, that are similar to those in CNS and Physiological and pharmacological properties of Basti cikitsa are said to be outcome of modulation of Gut brain up to certain extent.

Conclusion

In view of the recent information described above about the structure and function of an ENS a minibrain of the gut, the ancient wisdom of Ayurveda considering the pakwashaya as the seat of Vata system and the provision of basti therapy as the major systemic therapy for nervine system appear interesting and prompt open newer vistas for future research on ENS.

References

[1]*The Holistic Principles of Ayurvedic Medicine,* By Prof. R.H. Singh, First edition, 1998.

[2]*Charaka Samhita: Text with English translation and critical Exposition* by R.K. Sharma: Chaukhambha Sanskrit series, Varanasi(1990) Ch. Si. 1/40-41

[3]Gershon MD (2005) Nerves, reflexes, and the enteric nervous system. J. Clin. Gastroenterol. 38: S184-S193

[4]*Gray's Anatomy,* By Richard L.Drake et.al., Second edition, 2010

[5]*LANGMAN'S Medical Embryology,* By T.W. Saddler, Eleventh edition,2010

[6]*Sushruta Samhita,* Kaviraj Ambika Datta Shastri, Chaukhambha Publication Su.Chi 35/24.

[7]*Carak Samhita of Agnivesa,* Revised by Carak and Dradhbala with the Ayurvedic Dipika commentary of Cakrapanidatta,Vol 1 &2, Fifth edition, 1997. Ch. Si. 7/64

[8]*Astang Sangraha,* Pt. G.S. Changani, Krishna Das Academy Varanasi A.S.Si 5

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ROLE OF ALOE VERA IN ACNE

DR. ANJANA*, DR. NRIPENDRA SINGH** AND DR. P.C. CHAUDHARY***

Declaration

Nowadays acne is very common problem. Adolescent and young adult are typically affected . Acne vulgaris is a common and chronic skin disorder of pilosebaceous unit. Incidence of acne is 91% in male and 79% among female . Its prevalence remain high in adulthood, nearly 90% of teenagers have acne and half of them continue to experience symptoms as adult. Bye the age of 40 years, 1% of men and 5% of women still have lesion. Its primarily affect face, chest and back.

Its main effect are psychological i.e. slow personality development, stress, low self esteem. Most of the patient of acne who seeks medical care are concerned with the effect on their appearance , pain full nodule, scarring and patches of hyperpigmentation.

In modern medicine various drugs are available but they are not very good and have side effect too.

In ayurveda a plant ALOE VERA (GHRIT KUMARI) has been describe which is very effective in treating the acne and its complications. Recentaly various research have proved that aloe vera has very good result in acne patient. It reduces erythema, itching, pain and swelling, decreases comedones, reduces blemishes and helps in scar healing . It imparts a new glow to the skin.

Etiology

In etiology of acne following factors play role :

1. *Androgen;* spurt in androgen production during puberty and adolescent is responsible for development of sebaceous gland .
2. *Heredity;* excessive sebaceous gland activity is probably due to variation in end organ response to androgen and this may be genetically controlled.

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3. Follicular Keratinisation; abnormality of keratinisation of hair follicle plays an important role in pathogenesis of acne.

4. Propionibacterium Acnes; These commensal bacteria are markedly increased in number in subjects with acne.

Morphology

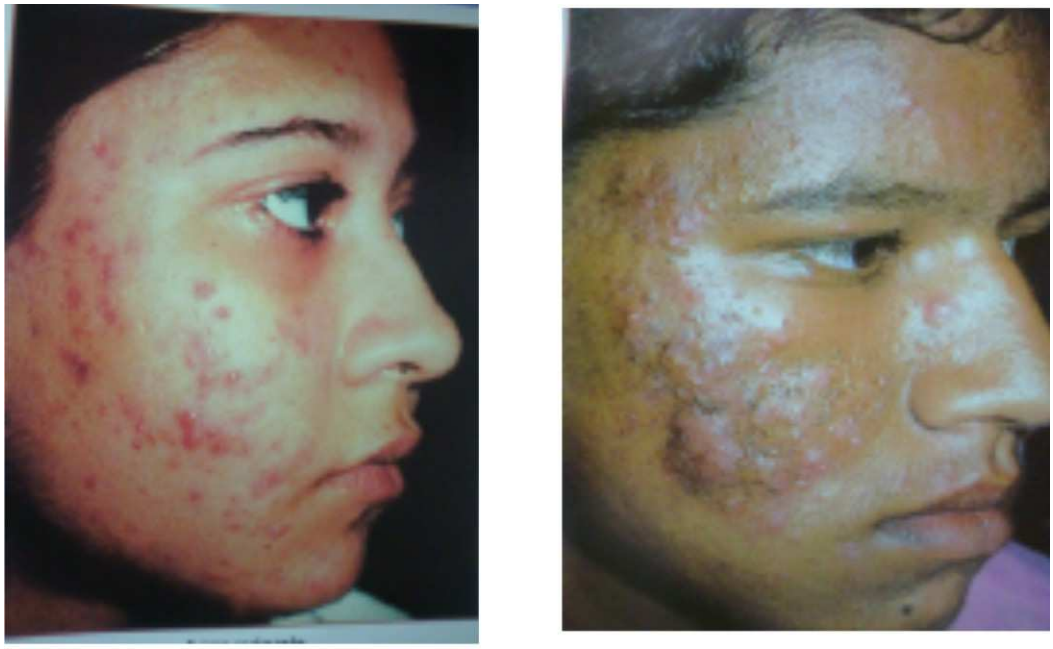

Fig 1- Acne vulgaris

According to clinical severity, a simplified grading of acne is :

1. GRADE 1 (Non inflammatory acne, Comedonal acne)
2. GRADE 2 (Papulopustular acne)
3. Grade 3 (Papulonodular acne)
4. GRADE 5 (Nodulocystic acne)

GRADE 1; Also called as non inflammatory acne or comedonal acne. Skin colored papules (white head , closed commedones) of 1-2 mm in diameter with a central white dot are the earliest lesion of acne. Little larger conical papules with acentral dilated follicular pore that houses a black plug are called black head or open comedones. A few erythematous papule may be present at this stage.

GRADE 2; Also called as papulopustular acne. In this grade multiple erythematous , conical, follicule of 2-4 mm in diameter present. Some of these topped by tiny pustule.

GRADE 3; Also called as papulonodular acne. A few larger indurated erythematous papule and nodule are present. Larger and deeper pustules may also occur.

GRADE 4; Also called as nodulocystic acne. Large skin colored and erythematous indurated nodule and there sequele charecterise this stage. Such painful nodule progress to form painless cystic swelling that ultimately rupture and heal with scars. Sometimes such scarring may be hypertrophic and be then associated with discharging sinuses with interconnecting sinus tracts, large open comedones are common. Such severe nodulocystic acne has been termed as acne conglobata. Nodulocystic acne is more common in males.

In ayurveda,acne has been defined in kshudra roga as *Mukhdushika* or *Yuvanpedika.*

Shalmalikantakprakhyah Kaphmarutshonitaih, Jayante Pidaka Yunam Vaktrey Ya Mukhdushikah. (Su.Ni-13/39)

Means which look like thorn of shalmali tree and it is due to kaph, vata and rakt dosh, and affect mainly face of adult known as mukhdushika (acne).

Complications of Acne

Psychological impact of acne on the personality development of an adolescent or job performance of a young adult is tremendous.

Large painful nodules are uncomfortable enough, but their progression to abscesses, cysts ,discharging sinuses can be disabling.

Facial scarring due to acne vulgaris is an important complication because of its cosmetic importance and psychological sequelae. Several types of scars seen in patients with acne include pitted scars, ice pick scars, varioliform scars, atrophic scars, hypertrophic scars, keloidal scars, bridge like scars etc.

Carcinoma rarely supervenes in the sinus tracts of acne conglobata.

Systemic symptoms rarely accompany severe acne(acne fulminaus).Fever, myalgia, arthralgia have been described.

Aloe Vera (Ghrit Kumari)

Fig 2- aloe vera plant and a cut leaf of it

Aloe vera is a stem less succulent plant spreading by offsets. The leaves are thick and fleshy. On cutting a leaf a yellowish color gel like substance comes out which is known as aloes (kumari saar) . This aloes is used therapeutically in skin disorders, specialy in acne.

Sanskrit name – Kumari, Ghritkumari, Ghrihkanya; *Hindi name*- Gwarpatha, Dekuwar; *English name*- Indian aloe; *Part Used*- Leaves, Aloes (kumari saar); *Rasa*- Katu; *Guna*- Guru, Snigdha, Picchil; *Verya*- Sheet; *Vipak*- Tikta; *Prabhav*- Kaphapittahar, Sothhar, Vedanasthapak, Tvachya, Twakdoshhar, Varnyakar, Kushthaghni.

ALOES (Kumari saar)- Gel like substance of aloe vera leaves; *Sanskrit name* – Kumari saar, Kanyasaar; *Hindi name*- Musabber, Alua; *English name*- Aloes; *Rasa*- Katu; *Guna*- Laghu, Ruksha, Tikshna; *Veerya*- Usna;*Vipak* – Tikta; *Prabhav* - Kaphapittahar, Sothhar, Vedanasthapak, Tvachya, Twakdoshhar, Varnyakar, Kushthaghni.

Chemical Composition Of Aloes (Kumari Saar); Aloes contain glucoside i.e. aloin and barbaloin ,Polysaccharide and Anthroquinone. Scientist have been found that the aloes is a mixture of antibiotics, astringent, coagulating agent, pain inhibitor, cell growth stimulator, and scar inhibitor. It contain various essential ingredients which contain vitamins, proteins, minerals, enzymes and amino acids.

Theraputic Uses Of Aloes (Kumari Saar); Aloes used in various disorder both externally as well as internally. Externally it is used in skin disorders such as acne vulgaris, roseasea, melasma, hyper pigmented spots, skin erythema, and swelling, photodermatitis, sunburn, cold sores, frost bites, dry skin, burns, surgical wound, dandruff, psoriasis and herpes genitalis. It is also used in itchiness and soreness of face associated with acne and after using of steroids, antibiotics, benjoyl peroxide and retinoids.It is also useful in hyperpigmented spot and scar left after acne.Aloes can reduce inflammation caused by dermaabrasion and microdermabrasion .

Systemically aloes is used in constipation, asthama, cold , bleeding, absence of menstrual period. Colitis, diabetes, varicose vein, bursitis, osteo arthritis, glaucoma and vision problems. Used as blood purifier and liver tonics.

Management Of Acne

General advices- Frequent washing of face with soap and luke warm water; Avoid hot and humid environment; Drink plenty of water and eat balance and nutritious diet.

Treatment
With Modern Medicine

*Topical:*Topical agents are aimed at either correcting the defect in keratinization(adapalene,retinoic acid 0.25-0.05%) or checking bacterial count(clindamycin1% erythromycin2%) or both (benzoyl peroxide 2.5-5%,sulpher 2%,resorcinol1%) . most of the agent do not cause any side effect other than skin irritation, retinoic acid can cause photosensitivity as well as initial worsening of skin lesion.

Syatemic :

- Vitanmin A not exceed 1 lac unit/ day
- Antibacterial- tetracycline 250 mg QID
- Doxycycline 100 mg OD
- Erythromycin 250 mg QID
- Cotrimoxazole 1 tab BD

Oral retinoids: isotretinoin 0.5mg to 1 mg/kg body wght/ day is better reserve for treatment of severe acne i.e. grade 4. Because of its teratogenicity it is obsolutly contraindicated in women of child bearing age group without proper councelling, written consent and concomitant double contraceptive precaution.

Antiandrogen: Cyproterone acetate 2 mg in combination with ethyle estradial 50 mcg given cyclically,is very effective in women.

Treatment With Aloes (Kumari Saar): Aloes is used topically in acne.It must be use under medical supervision.
Dose: As quatity sufficient.

Method Of Application Of Aloes in Acne

Application is very easy. If you have this plant at home, take a leaf , wash the leaf thoroughly, cut open its thick green rind to get the pulpe. Wash your face properly, pat it dry, and apply this pulp on the affected skin.

it can be applied by mixing with turmeric or other drugs. It can applied any time in day either in morning or in night. Consistant use of aloe to treat acne can improve symptoms and prevent further occurrence.

Mode Of Action Of Aloes in Acne

Aloes contain ploysachharide (mild antibiotic) that kills bacteria responsible for acne. Polysachharide also accelerate healing and provide building blocks to repair the damage.

It contain anthroquinone which facilitate the rejuvenation of the vital nutrients of skin.

It contain lectin , responsible for proper cell growth and repair.

Vitamin and mineral found in aloes responsible for soothing properties and help the skin to heal faster.

It contain gibberellin, a growth hormone, interacts with growth factor receptors on the fibroblast, thereby stimulating its activity and proliferation, which in turn significantly increases collagen synthesis after topical and oral Aloes.

It alleviate itching and soreness with acne.

It helps to tone the color of skin and remove acne scar in long run.

It helps to tighten pore thus decreasing the pores to exposure to germ.

It causes softening and smoothening of skin.

It reinforce the collagen integrity and collagen content of the skin which helps the skin to heal faster.

It eliminate the free radical from the skin.

It improve blood circulation through the area and prevent cell death around the wound thus speed up wound healing.

The astringent property of aloe removes excess oil and dirt from the skin to prevent acne breakout. It reduces the size of inflamed nodules and cysts to relieve pain caused by the swelling.

Side Effect

On topical application it may cause redness, burning, stinging sensation and rarely generalized dermatitis in sensitive individuals. Allergic reactions are mostly due to anthraquinones, such as aloin and barbaloin. It is best to apply it to a small area first to test for possible allergic reaction.

Reference

Bhav Prakash Nighantoo by Bhav Mishra, commented by K.C. Chunekar, Editd by G.S. Panday, chaukhambha bharti pub, Varanasi.

Clinical dermatology by V.N. sehajal and S. Jain 4th edition 2004 pub, JP brothers , new delhi.

Eugene Braunwald et. Al. Harrison's Priciple of Internal medicine, Ed. 18th vol. 1, New York, McGrawHill, New Delhi.

Illustrated Textbook Of Dermatalogy, JS Pasricha, Ramji Gupta, 3rd Edition, Jaypee Brothers medical publishers, New Delhi.

Indian Journal of Dermatology, 2008,53(4).

Indian Medicinal Plant, Kritikar and Vasu, 2nd edi 1976 bup, Vishan singh and MP singh, Dehradoon.

P.V. Sharma; Dravya guna Vigyan Volume 2, Chaukhamba Bharati Academy, Varanasi.

Sushruta sanhita, Ayurveda Sandipika, Hindi commentary by Ambika dutta shashtri, Chaukhambha Sanskrit series varanasi

Treat Ment of skin diseases, J.S. Pasricha, Oxford and IBH Publication, New Delhi.

www.naturaldatabase.com, May 4, 2009.

www.naturalstandard.com may 4, 2009.

www.niehs.nih.gov, April 5, 2011.

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GLOBOZOOSPERMIA –A RARE CAUSE OF MALE INFERTILITY

ANJALI RANI*, AKHTAR ALI** AND AMIT KUMAR RAI***

Declaration

The Declaration of the authors for publication of Research Paper in The Indian Journal of Research Anvikshiki ISSN 0973-9777 Bi-monthly International Journal of all Research: We, *Anjali Rani, Akhtar Ali and Amit Kumar Rai* the authors of the research paper entitled GLOBOZOOSPERMIA –A RARE CAUSE OF MALE INFERTILITY declare that , We take the responsibility of the content and material of our paper as We ourself have written it and also have read the manuscript of our paper carefully. Also, We hereby give our consent to publish our paper in Anvikshiki journal , This research paper is our original work and no part of it or it's similar version is published or has been sent for publication anywhere else.We authorise the Editorial Board of the Journal to modify and edit the manuscript. We also give our consent to the Editor of Anvikshiki Journal to own the copyright of our research paper.

Abstract

Globozoospermia is a condition in which acrosome is absent in sperm resulting in round headed sperm. It is a rare (<0.1%) inherited infertility syndrome, which was first described by Schirren et al. 1971. Acrosome plays an important role in fertilization and sperm-morhogenesis

Purpose: *Sometime we see the count of sperms only and do not pay much attention at morphology of sperms. This happens mainly at the peripheral centres. In this condition count is normal but they cannot fertilize ovum because of absence of acrosome.*

Case: *37 year old female married since 17 years regularly staying with husband presented with primary infertility. On doing examination and investigations female partner was observed to be normal. The semen analysis of male partner showed that in almost all sperms acrosome was absent.*

The patient was advised ICSI.

Conclusion: *In infertility treatment, we should not miss this condition in diagnosis.*

Introduction

Globozoospermia is a condition in which acrosome is absent in sperm resulting in round headed sperm. It is a rare (<0.1%) inherited infertility syndrome, which was first described by Schirren et al. 1971.

Acrosome plays an important role during fertilization. Spermatozoa lacking acrosome are unable to penetrate zona pellucida. The acrosome is an organelle formed of fused vesicles, containing hydrolytic enzymes derived

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from the Golgi network. The amount of vesicles transported from the Golgi network determines the content and volume of the acrosome.

The acrosome gets functional after ejaculation in the female reproductive tract, where it releases its contents during acrosome reaction. This reaction is required for penetration of the sperm through zona pellucida, a thick extracellular layer surrounding the oocyte. After penetration, sperm reaches the perivitelline space to fertilize the oocyte.

Case report

An infertile couple married for 17 years presented with complains of inability to conceive.

On investigations:

Female partner – Normal

Male partner: Semen analysis—

- Count –41 million
- Motility –36%
- Gross morphology—95% spermatozoa acrosome is absent (FIGURE 1,2)
- 0% normal acrosome spermatozoa

Treatment advised –ICSI (Intracytoplasmic sperm injection)

Material & Methods

1. Semen analysis :

   Count
   Motility
   Sperm morphology

2. Karyotyping

Results

Karyotype –normal (FIGURE 3)

Discussion

Very few reports on Globozoospermia in human are available because of its rare incidence. In this case we found that Globozoospermia is the cause of infertility.

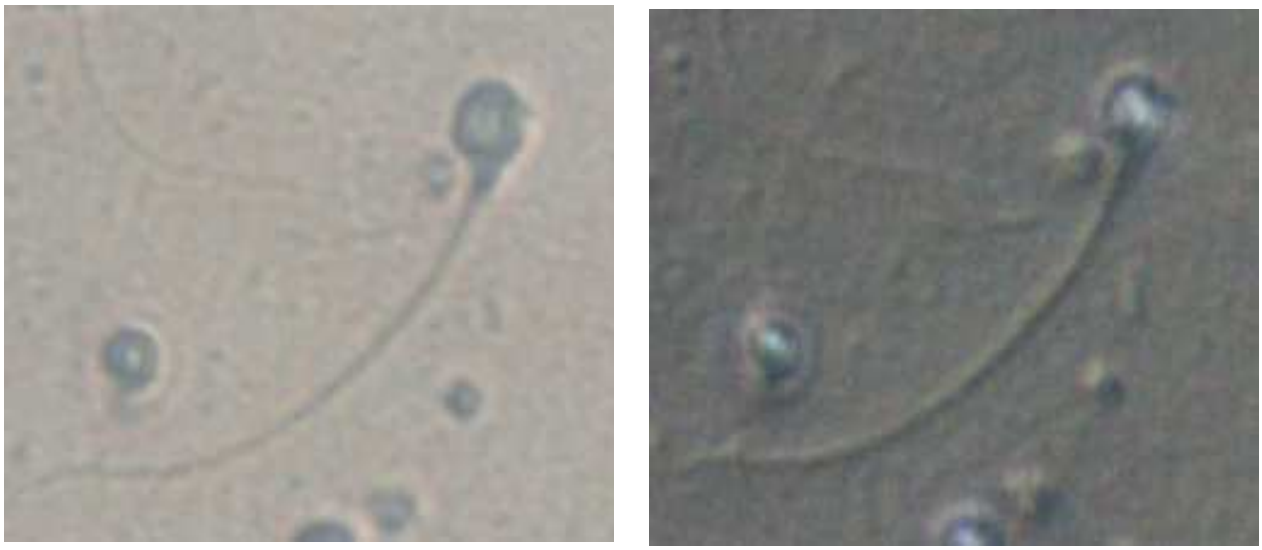
A recent study done by Harbuz et.al 2011 shows that homozygous deletion of *DPY19L2* causes globozoospermia. Whole genome SNP analysis of 20 patients with globozoospermia revealed that in most patients there was a deletion of 200kb including *DPY19L2*. This gene is mainly expressed in testis. It remains to be seen if the same gene is mutated in this individual.

References

HARBUZ R. et.al. (2011); A Recurrent deletion of *DPY19L2* causes infertility in man by blocking sperm head elongation and acrosome formation. Am. J. Human Genet. 88: 351-361

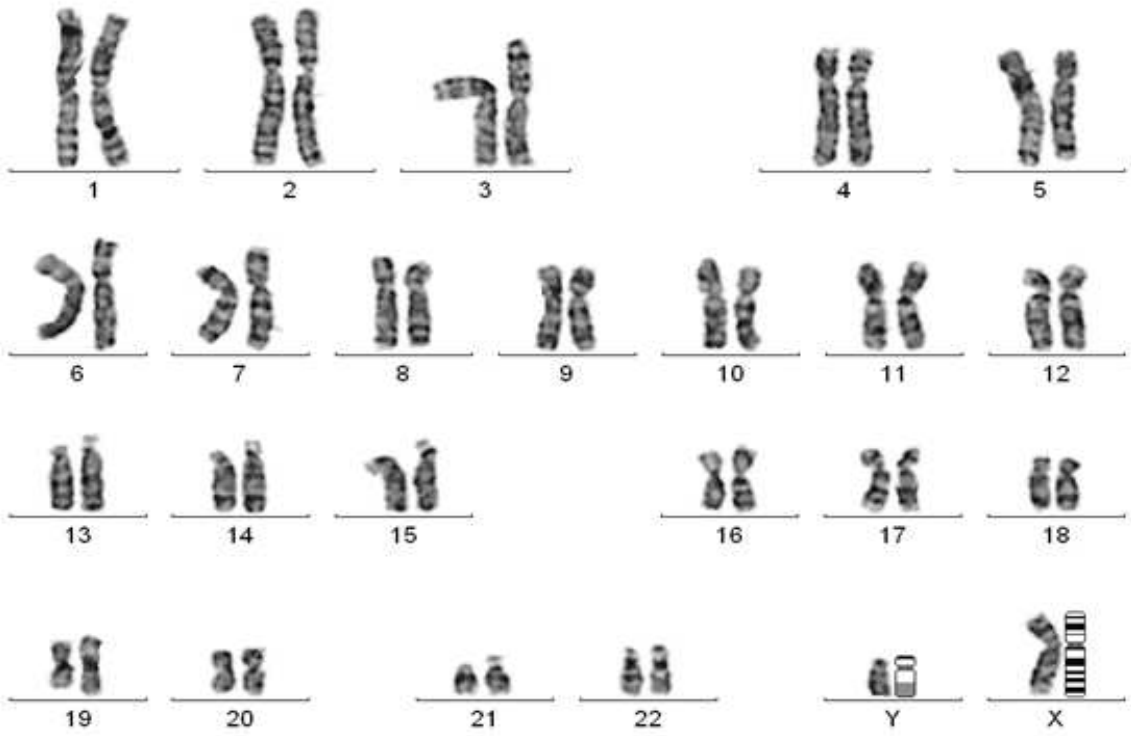
PAIARD C., PASINI ME, GIAORIA M, BERRUTI G. (2011); Failure of acrosome formation and globozoospermia in the wobbler mouse, a Vps54 spontaneous recessive mutant. Spermiogenesis, 1: 52-56

Fig 1 and 2: Sperms with globular head



Patient's sperm (Bright field and DIC)

Figure 3: Karyotype:



Letter No.V-34564,Reg.533/2007-2008 INDIAN JOURNAL OF RESEARCH(2014)**8,12-16**
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THE IMPACT OF ALCOHOL AND CIGARETTE SMOKING ON THE SKELTON DURING PUBERTY AND ADOLESCENCE IN URBAN AREA OF MUZAFFARPUR (BIHAR) DISTRICT

DR.NILU KUMARI*

Declaration

The Declaration of the author for publication of Research Paper in The Indian Journal of Research Anvikshiki ISSN 0973-9777 Bi-monthly International Journal of all Research: I, *Nilu Kumari* the author of the research paper entitled THE IMPACT OF ALCOHOL AND CIGARETTE SMOKING ON THE SKELTON DURING PUBERTY AND ADOLESCENCE IN URBAN AREA OF MUZAFFARPUR (BIHAR) DISTRICT declare that , I take the responsibility of the content and material of my paper as I myself have written it and also have read the manuscript of my paper carefully. Also, I hereby give my consent to publish my paper in Anvikshiki journal , This research paper is my original work and no part of it or it's similar version is published or has been sent for publication anywhere else. I authorise the Editorial Board of the Journal to modify and edit the manuscript. I also give my consent to the Editor of Anvikshiki Journal to own the copyright of my research paper.

Abstract

During puberty and adolescence, the Skelton takes up calcium avidly and builds up its reserves. This uptake of calcium into the bone is largely dependent on calcium and vitamin D nutrition as well as exercise. Alcohol and Cigarette smoking is a risk factor for vertebral fore arm and hip fracture especially in slender women, smoking was also associated with higher follicle stimulating hormone (FSH) and luteinizing hormone (LH) levels and lower serum PTH level, serum calcium level and urinary calcium concentrations, marker for bone resorption. Alcohol especially excessive consumption (more than two drinks a day) for an extended period, results in bone loss. Bone loss is thought to occur because the metabolism of alcohol generates additional acid that is buffered in part by the Skelton. The combination of smoking and alcohol, so common among adolescent (Both boys & girls) in urban area of Muzaffarpur district places them in increased risk for osteoporosis because both these risk factors operate to reduce BMD.

The study has revealed that the exercise use of smoking, intake of tobacco and unsafe alcohol intake are the most important risk factor for osteoporosis.

Introduction

The three main mechanism by which osteoporosis develops are an inadequate peak bone mass, excessive bone resorption and inadequate formation of new bone during remodeling. An intuply of these mechanism undulies the development of fragile bone tissue, hormonal factors strongly determine the rate of bone resorption,

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lack of estrogen increase bone resorption as well as deposition of new bone that normally takes place in weight bearing bones. The amount of estrogen needed to suppress this process is lower than that normally needed to stimulate the uterus and breast gland. In addition to estrogen calcium metabolism plays a significant role in bone turnover.

A number of clinical decision rule have been created to predict the risk of osteoporotic fracture. The Q fracture score was developed in 2009 and is based on age , BMI, smoking status, alcohol use, rkeumatoid arthritis, CVD, Type – 2 diabetes, liver disease, asthma etc. Methods to prevent osteoporosis include lifestyle, nutrition and medication that can be used for prevention. Lifestyle prevention of osteoporosis in many aspects invensions from potentially modifiable risk factors. As tobacco, smoking and unsafe alcohol intakes have been linked with osteoporosis.

Material and Methods

The study was conducted in urban area of Muzaffarpur district (Bihar), 100 (75 Boys and 25 Girls) osteoporotic patient were selected for the study. A interviewed schedule was formulated to elicit information on family profile of the patient, personal habits of the patient and bone mineral density test of the patient. The responses on various aspects were collected from the selected osteoporotic patient.

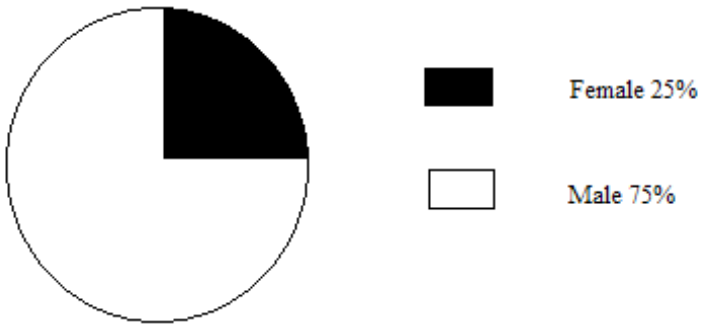
Results and Discussion

Results of the present study have been presented under following section and discussion has been given at the end of each aspect concerned. A study of the general condition of the respondent in the present study has its own importance. It will unable us to understand clearly the diverse factors affecting the value orientation of the respondents, this age, sex and caste, their educational standard economic status, occupation etc.

T A B L E I *Showing sex distribution*

Sl. No.	Sex	Age	No. of Patient	Percentage
1	Male	20 - 30	75	34.5
2	Female	20 - 30	25	12.5
	Total		100	50.0

In this study there were 75 (37.5%) male and 25 (12.5%) female which constibuted Male: Female ratio is 3:1



PRE CHART SHOWING SEX DISSTRIBUTION OF RESPONDENTS

T A B L E II *Family Profile of Osteoporosis Patient*

Variables	Male	Female	Total
	75	25	100

Type of family			
Nuclear	36	40	76
Joint	14	10	24
Size of the family			
1 – 4	16	18	34
4 – 6	20	18	38
6 – 8	12	10	22
Above	02	04	06
Marital status			
Married	46	28	74
Unmarried	04	02	06

From Table – II the family profile of osteoporotic patient have been presented. It is evident the most of the respondents (36 males and 40 females) belonged to nuclear families. So the nuclear type of family is also stimulated caused of osteoporosis.

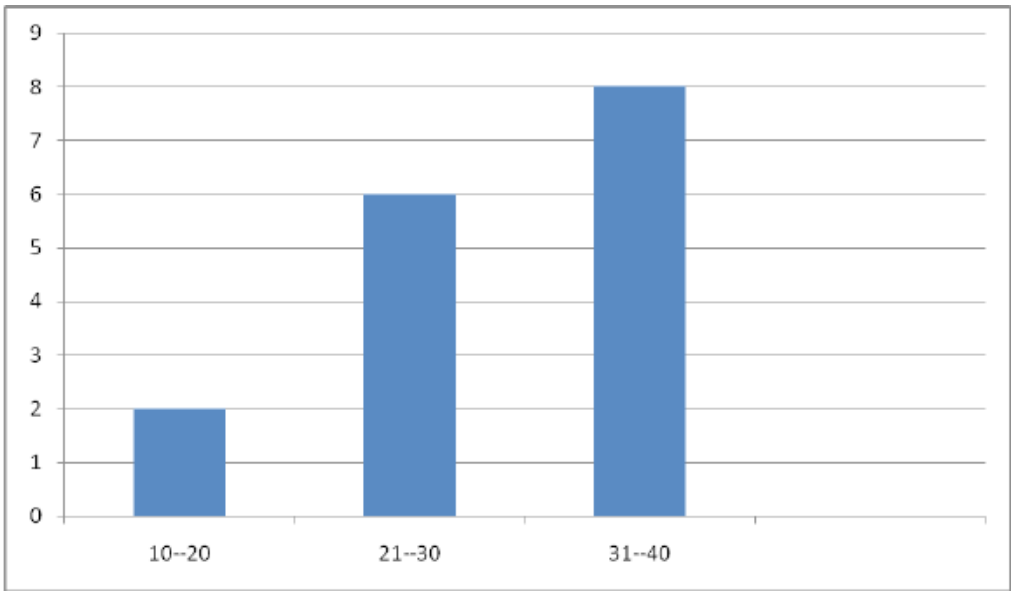
This study future revealed that the majority of the respondents have a family size of ranging from 4 to 6 only. Only 2 male osteoporotic patients and 4 female osteoporotic patients had a family size of above 8 members. Most of the respondents were married.

T A B L E III *Personal Habits of the Osteoporosis Patient*

Variables	Male	Female	Total
	75	25	100
Habits			
Alcohol	35	06	41
Betal leaver and nuts	25	-	25
Cigarette	50	05	55
Pan masala	60	10	70
tobacco	50	-	50

Table III point out the among 75 male respondent and 25 female respondent alcohol was consumed, 35 male osteoporotic patient. 50 male patients and 05 female patient smoked Cigarettes. 60 male patients and 10 female patients were consuming pan masala and others. Only 50 male patients consume tobacco leaves.

Bar Chart Showing Age Distribution of Respondents



Age group (in years)

Potentially modifiable

Excess alcohol; small amount of alcohol do not increase osteoporosis risk and may be beneficial, but chronic heavy drinking (alcohol intake greater than 3 units/day) aspecially at a younger age, increase risk significantly.

Tobacco smoking; tobacco smoking inhabits the activity of osteoblasts and is an independent risk factor of osteoporosis. Smoking also results in increased breakdown of exogenous estrogen, lower body weight and earlier menopause, all of which contributes to lower bone mineral density.

Summary and Conclusion

The present study was conducted on 100 osteoporotic patients (75 male and 25 female) in urban area of Muzaffarpur district of Bihar. The occurrence of osteoporosis disease was highest in nuclear type families in both the group (male and female). The incidence of osteoporosis disease was highest for male and female in the high income group. In higher income group, they high intake of alcohol, affine protein soft drinks can increase calcium loss. If soft drinks are consumed in place of milk, the calcium intake would be substantially reduced.

So, the bone health is dependent on numerous factors, including genetic, dietary intake of specific nutrient, exercise, management of chronic disease, alcoholic, cigarette smoking, tobacco and use of medication whether young or old any person can made improvements in lifestyle which can protect skeletal integrity.

Reference

Bolland MJ, Barbeu PA, Doughty RN, et al. (2008); *"Vascular events in healthy older women receiving calcium supplementation: randomised controlled trial"* BMJ 336 (7638): 262. doi: ID.1136/bmj. 39440.525752.BE. PMID 18198394

Brenneman SK, Barrett – Connor E, Sajjan S, Markson LE, Siris ES (2006); "*Impact of recent fracture on health – related quality of life in postmenopausal women"*. J Bone Miner. Res. 21 (6): 809 – 16. doi: 10. 1359/jbmr. 060301. PMID 16753011.

Bonaiuti D, Shea B, Iovine R, et al. (2002); *"Exercise for preventing and treating osteoporosis in postmenopausal women"*. Cochrane Database Systematic Rev. online (3):CD000333. doi: 10: 1002/14651858 CD000333. PMID 12137611

Cheng S, Sipilä S, Taaffe DR, Puolakka J, Suominen H.(2002); *"Change in bone mass distribution induced by hormone replacement therapy and high-impact physical exercise in post-menopausal women"*. Bone 31 (1): 126 – 35. doi: 10. 1016/58756 - 3282 (02) 00794 – 9. PMID 12110425.

Chien MV, Wu YT, Hsu AT, Yang RS, Lai JS (2000); *"Efficacy of a 24 – week aerobic exercise program for osteopenic postmenopausal women"* Calcif Tissue int. 67 (6): 443 -48: doi: 10.1007 IS 002230001180. PMID 11289692.

Cranney A, Jamal SA, Tsang JF, Josse RG, Leslie WD (2007); *" Low bone mineral density and fracture burden in postmenopausal women"* CMAJ 177 (6): 575 – 80. doi: 10. 1503/cmaj. 070234. PMID 17846439.

"Calcium and Milk". Harvard School of Pulic Health. 2007. http://www.hsph. Harvard. Edu /nutrition source/ calcium. Html. Retrieved 2008 – 01 – 28.

Houtkooper LB, Stanford VA, Metcalfe LL, Lohman TG, Going SB, (2007); *"Preventing Osteoporosis the Bone Estrogen Strength Training Way"* Journal ACSM's Health and Fitness Journal. 11: pp. 21 – 27.

Jackson RD, Lacroix AZ, Gass M, et al. (2006); *"Calcium plus Vitamin D Supplementation and the Risk of Fractures"* N Engl. J Med. 354 (7) : 669-83, doi: 10. 1056/NEJ Moa 055218.PMID 16481635

Kerr D, Morton A, Dick I, Prince R (1996); *"Exercise effects on bone mass in postmenopausal women are site – specific and load – dependent"*. Yarasheski KE, et al. (2003). J. Bone Mineu Res. 11(2): 218 – 25. doi:10,1002/jmbr. 5650110211. PMID 8822346.

"Merck Medicus Modules: Osteoporosis Epidemiology". Merck and Co. , Inc. http://www. Merck medicus. Com / pp / us / hep / disease modules / osteoporosis / epidemiology. Jsp. Retrieved 2008 – 06 – 13 .

National Osteoporosis Foundation. America's Bone Health: The State of Osteoporosis and Low Bone Mass in our Nation. Washington, DC: National Osteoporosis Foundation, 2002.

RIGGS BL, MELTON LJ , 3rd . (2005); *" The worldwide problem of osteoporosis: insights afforded by epidemiology"*. Bone 17 (5 Suppl.): 5055 – 5115. doi: 10.1016/8656 – 3282 (95). 00258 -4. PMID 8573428.

Report of a Joint WHO/ FAO /UNU Expert Consultation (2007) protein and amino acid requirements in human nutrition, pp 224 – 26. ISBN 978 -92 – 4 120935 -9.

Report of a Joint WHO / FAO / UNU Expert consultation (2002), Human Vitamin and Mineral Requirements ppl 66 -67.

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A CASE OF SEPTIC ABORTION WITH UTERINE PERFORATION WITH FETAL BONES IN ABDOMINAL CAVITY.

DR ANJALI RANI* AND DR KALPANA SINGH**

Declaration

The Declaration of the authors for publication of Research Paper in The Indian Journal of Research Anvikshiki ISSN 0973-9777 Bi-monthly International Journal of all Research: We, *Anjali Rani and Kalpana Singh* the authors of the research paper entitled A CASE OF SEPTIC ABORTION WITH UTERINE PERFORATION WITH FETAL BONES IN ABDOMINAL CAVITY. declare that , We take the responsibility of the content and material of our paper as We ourself have written it and also have read the manuscript of our paper carefully. Also, We hereby give our consent to publish our paper in Anvikshiki journal , This research paper is our original work and no part of it or it's similar version is published or has been sent for publication anywhere else.We authorise the Editorial Board of the Journal to modify and edit the manuscript. We also give our consent to the Editor of Anvikshiki Journal to own the copyright of our research paper.

Abstract

23 year old female at 13 weeks gestation underwent illegal abortion by untrained personnel. This patient reported to us with fever, pain abdomen, distension of abdomen. In this patient after stabilization laparotomy done and there was lots of pus present . There was uterine perforation and macerated fetal bones were found in abdominal cavity. Pus was drained . Uterine perforation closed. Fetal bones removed. Abdominal lavage done with normal saline. Abdomen closed in layers. Postoperative period was uneventful.

Key words : Septic abortion, uterine perforation, Fetal bones

23 year old female G4P1+2 at 13 weeks of gestation resident of Baliya (U.P.) underwent illegal abortion by some untrained personnel . Patient developed fever , distension of abdomen, burning micurition. Antibiotics were started and investigations were done.USG showed collection inside the peritoneal cavity. Hemoglobin was 8 gm . one blood transfusion was done.

Exploratory laparotomy done. Findings are :

1. Pus was present.
2. Uterus cwas covered wiyh white slough like material.
3. There was perforation on posterior wall of uterus.
4. In abdominal cavity fetal bones were found and removed.
5. Bowel were explored to rule out any perforation there was no bowel injury.

Abdomen was closed in layers

In post-op period patient was uneventful.

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In this part of India still illegal abortions are still there and they land up in complications. So its high time to make people aware for where they have to go for abortions so that maternal mortality and morbidity can decreased

Figures

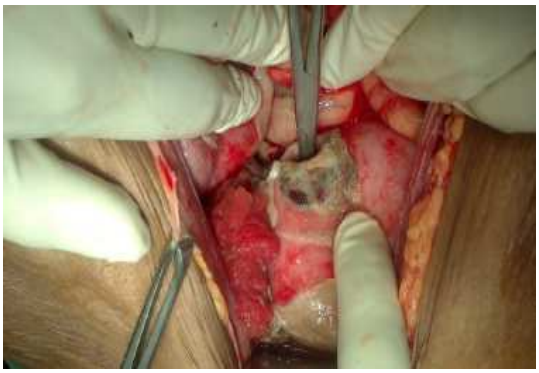

Fig 1. Uterine perforation

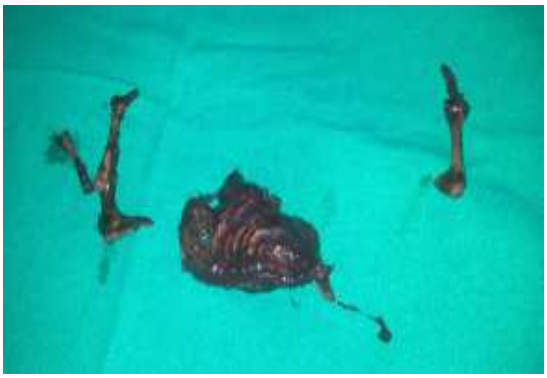

Fig 2 Fetal bones

References

Chauhan NS, Gupta A , Soni PK, Surya M, Mahajan SR. J Radiol Case REP . 2013 Jan; 7(1):41-7. Doi 10. 3941/jrcr.v 7i1.1332.Epub 2013 Jan 1.

Fawad A,Naz H, Khan K, Aziz-un-Nisa.

J Ayub Med Coll Abbottabad.2008 Oct-Dec;20(4):145-8

Nyambaka M. Case history: complication and management of abortion.Kenya Nurs J.1987 Dec;15(2):17-23.

Zavodskov VK, Grilikhes TP, Vikin SM. Vestn Khir Im I I Grek.1989 jul;143(7):68-9.Russian.

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A STUDY ON SURFACE WATER QUALITY OF BALRAMPUR CITY NEAR INDUSTRIAL AREA.

DR. SARIKA TRIPATHI*

Declaration

The Declaration of the author for publication of Research Paper in The Indian Journal of Research Anvikshiki ISSN 0973-9777 Bi-monthly International Journal of all Research: I, *Sarika Tripathi* the author of the research paper entitled A STUDY ON SURFACE WATER QUALITY OF BALRAMPUR CITY NEAR INDUSTRIAL AREA. declare that , I take the responsibility of the content and material of my paper as I myself have written it and also have read the manuscript of my paper carefully. Also, I hereby give my consent to publish my paper in Anvikshiki journal , This research paper is my original work and no part of it or it's similar version is published or has been sent for publication anywhere else. I authorise the Editorial Board of the Journal to modify and edit the manuscript. I also give my consent to the Editor of Anvikshiki Journal to own the copyright of my research paper.

Abstract

The present study deals with surface water quality of Balrampur city for the period of one year from January 2010 - December 2010 . The analysis of physicochemical parameters includes temp , ph , trurbidity, TDS, total hardness, chloride, sulphate ,nitrate, calcium, magnesium, iron , dissolved oxygen and total solids . These parameters were analysed and compared based on water quality index (WQI). This determines the water quality for irrigation and potable purpose. The result indicates very poor status of surface water of Balrampur city . Comprative study of the four different sites indicates that the surface water nearly industrial areas of Balrampur city is not suitable for human and cattle consumption.

Introduction

Water pollution is a worldwide phenomenon and is one of the most serious problems confronting mankind today . Contamination of water bodies takes place mostly due to discharge of effluents from industries , domestic wastes and different types of pesticides. The growth of human civilization and ever increasing population required more demand ,comfort and infrastructure which led to the manifold expansion of industries,agriculture and unabating process of urbanisation.

Modern civilization is proud of a large scale industrialization . Apart from the care and benefit which they provide to masses, they also generate a multitude of hazardous industrial wastes and toxic substances which contaminate water , soil and air . The rapid industrialization and the growth in the population substantially alter

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the nature of inneraction of man and his envoirnment. Many industrial effluents are either discharge intro streams or dumped into the surrounding land. Industrial wastes are largely consist of organic compounds like phenols, aldehydes, plasticizers, alkalies , oil and grases dyes etc. alongwith inorganic matters and non-biodegradable materials. These pollutants affect and alter the chemical and biological properties of soil and water .As a result hazardous chemicals can enter into human food chain causing serious effects on living organism.

The sugar industry is playing an inportant role in the economic development of country but the effluents released by them produce a high degree of organic pollution in the aquatic system. They also alter the physico-chemical characteristics of water .The impact of sugar mill is huge on environment and can not be neglected under any circumstances. In absence of proper disposal treatment and without adopting enviornment friendly technique it can causes pollution on environment .

Most people are more familiar with surface water than ground water . Surface water bodies such as nalahs ,rivers,lakes,strams and oceans can be seen all around but not ground water. Surface water usualy rich in turbidity , suspended impurities of decaying organic matter.

As we know that water is used for drinking as well as irrigational purposes, it is obvious to monitor the quality of water , especially in urban and industrial areas.(Singh and Parawana 1992)

District Balrampur is located in the Terai region of Utter Pradesh, Bordering Nepal with a latitude of 27° 20‘and longitude 82° 40‘ The ground water quality and surface water quality of whole region appears to be not good so most of the population is suffering from various water born disease.”Balrampur Chini Mills Limited “and Alcohol unit are located at Bhagwatiganj.Many other small industries are located at Dharampur near Bhagwatiganj suwanh Nalah is the main drange system of Balrampur town taking input from civic , domestic and industrial dischanges.Suwanh Nalah originates from Shrawasti District passes through Balarampur city , Shriduttganj and finally confluences the Rapti river .(Prazapati and Raol,2007) so it appeared appropriate to evaluate and monitor the quality of surface water in this region is an apparent attempt to find out the degree of pollution in it .

Present study deals with the water quality index (WQI) to assess the suitability of water for human use nearby industrial areas of Balrampur

Materials and Methods

The quality of surface water was determined by collecting samples in areas to and distant from the BCML and Distillery unit. These points are Ghughulpur ,Khutehna Naher balaganj, and Rapti confluences respectively . The quality of surface water was continuously monitored from above mentioned points in Balrampur city for the period of one year from Jan. 2010 - Dec. 2010 surface water samples were collected from the surface of floating stream in clean and dry plastic bottles. The samples were analysed for temp. and þH on the spot, while the other parameters were analysed in the laboratory following standard methods (APHA 1998).

Water Quality Index (WQI)

A water quality index relates a group of water quality parameters to a common scale and combines then into a single number in accordence with a chosen method of computation . The WQI was calculated by comsidering 12 important physico - chemical parameters using WHO standards by the following formula :

$$WQI = \sum_{i=1}^{12} Q_i \; W_i \; / \sum_{i=1}^{12} W_i$$

Where W_i is a unit -weight factor and — $W_i = K/S_i$
Where K is propertionality consotant and S_I is the standard value of i^{th} parameter.
The W_i for all 12 chosen parameters with standard values Q_i is determined as follows -

$$Q_i = 100(V_i - V_{io}) / S_i - V_{io}$$

Where -
Q_i = Quality rating for the n^{th} quality parameter.
V_i = Estimated value of the n^{th} parameter at a given sample site (point).
S_i = Standard permissible value of the n^{th} parameter
V_{io} = Ideal value of the n^{th} parameter for pure water .
All the ideal values (V_{io}) are taken as zero for water except for pH = 7.0 , DO =14.6 mg/l.

Physico - Chemical parameter of water at Pionts I, II , III and IV

S.No.	Parameters	Standard Value (S_i)	P I	P II	P III	P IV
1.	þH	8.5	7.1	7.1	7.8	7.2
2.	Turbidity	5.0	4.7	5.3	9.5	5.4
3.	TDS	500	1205	1303	1410	1308
4.	Total Hardness	200	260	305	387	307
5.	Cl^-	200	88	105	146	105
6.	So_4^{--}	200	86	103	138	106
7.	No_3^-	45	0.7	1.1	3.5	1.3
8.	Ca^{++}	75	48	60	96	63
9.	Mg^{++}	50	28	37	69	39
10.	Iron	0.3	0.51	0.60	1.3	0.62
11.	Do	6	2.4	1.7	0.3	2.0
12.	Total Solid	600	1270	1395	1635	1401

Calculation of WQI at Point P I (Ghughulpur):-

S.No.	Parameters	Sample (V_i)	Standard value (S_i)	Q_i	W_i	$Q_i X W_i$
1.	pH	7.1	8.5	6.66	0.0302	0.2011
2.	Turbidity	4.7	5.0	94	0.05146	4.8372
3.	TDS	1205	500	241	0.0005	.1205
4.	Total hardness	260	200	130	0.0012	.156
5.	Cl^-	88	200	44	0.0012	.0528
6.	So_4^{--}	86	200	43	0.0012	.0516
7.	No_3^-	0.7	45	1.55	0.0057	.0088
8.	Ca^{++}	48	75	64	0.0034	.2176
9.	Mg^{++}	28	50	56	0.0051	.2856
10	Iron	.51	0.3	170.00	0.8576	145.79
11.	DO	2.4	6	141.86	0.0428	6.07
12-	Total Solid	1270	600	211.66	0.0004	.08466
$\sum Q_i W_i / \sum W_i$				Total	0.9999	157.89164

Calculation of WQI at Point P II (Khutehna):

S.No.	Parameters	Sample(V_i)	StandardValue(S_i)	Q_i	W_i	Q_i X W_i
1.	pH	7.1	8.5	6.66	0.0302	0.20113
2.	Turbidity	5.3	5.0	106	0.05146	5.4547
3.	TDS	1303	500	260.6	0.0005	0.1303
4.	Total hardness	305	200	152.5	0.0012	0.183
5.	Cl^-	105	200	52.5	0.0012	0.0618
6.	So_4^{--}	103	200	51.5	0.0012	0.0618
7.	No_3^-	1.1	45	2.44	0.0057	0.01390
8.	Ca^{++}	60	75	80	0.0034	0.272
9.	Mg^{++}	37	50	74	0.0051	0.3774
10	Iron	0.60	0.3	200	0.8576	171.52
11.	DO	1.7	6	150	0.0428	6.42
12	Total Solid	1395	600	232.5	0.0004	0.093
$\sum Q_i W_i/\sum W_i$					0.9999	184.80871

Calculation of WQI at Point P III (Neherbalaganj):

S.No.	Parameters	Sample(V_i)	StandardValue(S_i)	Q_i	W_i	Q_i X W_i
1.	pH	7.8	8.5	53.33	0.0302	1.6105
2.	Turbidity	9.5	5.0	190	0.05146	9.774
3.	TDS	1410	500	282	0.0005	0.141
4.	Total hardness	387	200	193.5	0.0012	0.2322
5.	Cl^-	146	200	73	0.0012	0.0876
6.	So_4^{--}	138	200	69	0.0012	0.0828
7.	No_3^-	3.5	45	7.77	0.0057	0.04428
8.	Ca^{++}	96	75	128	0.0034	0.4352
9.	Mg^{++}	69	50	138	0.0051	0.7038
10	Iron	1.3	0.3	433.33	0.8576	371.62
11.	DO	0.3	6	166.27	0.0428	7.11
12	Total Solid	1635	600	272.5	0.0004	0.109
$\sum Q_i W_i/\sum W_i$				Total	0.9999	391.95038

Calculation of WQI at Point P IV (Rapti Confluences):

S.No.	Parameters	Sample(V_i)	StandardValue(S_i)	Q_i	W_i	Q_i X W_i
1.	pH	7.2	8.5	13.33	0.0302	0.4025
2.	Turbidity	5.4	5.0	108	0.05146	5.5576
3.	TDS	1308	500	261.6	0.0005	0.1308
4.	Total hardness	307	300	153.5	0.0012	0.1842
5.	Cl^-	105	200	52.5	0.0012	0.063
6.	So_4^{--}	106	200	53.0	0.0012	0.00636
7.	No_3^-	1.3	45	2.88	0.0057	0.0164
8.	Ca^{++}	63	75	84	0.0034	0.2856
9.	Mg^{++}	39	50	78	0.0051	0.3978
10	Iron	0.62	0.3	206.66	0.8576	177.23
11.	DO	2.0	6	146.51	0.0428	6.270
12	Total Solid	1401	600	233.5	0.0004	0.0934
$\sum Qi\ Wi/\sum Wi$				Total	0.9999	190.7776

S.No.	WQI	Status	Possible use of water.
1.	0-25	Excellent	All purpose like potable ,industrial & Agricultural
2.	26-50	Very Good	Domestic, industrial and agricultural
3.	51-75	Good	Domestic and industrial
4.	76-100	Fair	Agricultural and industrial
5.	101-150	Poor	Agricultural
6.	150-200	Very Poor	Not much suitable for agriculture
7.	201 and Above	Worst	Can be used only after proper treatment.

T A B L E *The WQI of surface water in relation to WHO standards at different points in Balrampur city-*

S.No.	Name of point	WQI	Water Quality Rating
1.	Ghughulpur P I	157.89164	Not much suitable for agriculture
2.	Khutehna P II	184.80871	Not much suitable for agriculture
3.	Naherbalaganj P II	391.95038	Can be used only after proper treatment.
4.	Rapti confluences P IV	190.7776	Not much suitable for agriculture.

Results and Discussions

The values of various physic -chemical parameters for calculation of WQI of different points (PI, PII, PIII, and PIV) and drinking water standards recommended by WHO are given in table 1 . The analysis of WQI was under taken following the methods of Chatter ji et. al. (2002) , Dhem bare et. al. (2002) and Devi et. al. (2005).

pH Value : The pH value of the surface water near industrial areas of Balrampur was in slightly in alkaline range varying from 7.1 to 7.8 . The pH Value is with in WHO standard.

Turbidity : This study shows that the turbidity of surface water of Naherbalaganj is maximum and in the range of 9.5 to 10.0 . As per WHO standards the desirable turbidity of drinking water should be 5.0 . Thus the surface water of any sample point is not suitable for drinking and irrigation .

TDS : TDS of all sample points are above the permissible limits.

Total Hardness : The value of total hardness of sample point PI is within the permissible limit and value of PII and PIV are slightly more the permissible limit,. Only the value of PIII is very height . So the surface of water of sample point PI, PII and PIV can be safely used for domestic , industrial and irrigational purposes as far as hardness values are concerned .

Chloride : The concentration values of Cl^- were found below from the permissible limit.

Sulphate : The concentration of SO_4^{--} were also below from the permissible limit.

Nitrate : Nitrate represents the highest oxidized from of nitrogen . Most of the surface water are deficient in nitrate .

Calcium : Calcium is one of the most abundant substances of the natural water .Surface water of PIII is hard whereas surface water of PII and PIV are within limits . Surface water of Ghughulpur is not hard. Use of hard water should be avoided for industrial purpose .

Magnesium : The maximum value of Mg^{+2} ions are present in the surface water of P III and this is above the permissible limit . The Mg^{+2} concentration at P I and P IV are approximately equal and below the permissible limit.

Iron : Value of iron in all samples are above the permissible limit , and this parameter is a major source of pollution in our area of study.

DO : The value of DO shows that the surface water of all sites are polluted .

Total solid : The concentration of total solid of all the samples are above the permissible limit.

REFERENCES

APHA (1998); Standard Methods for water and waste water Analysis , 20 th ed . American Public Health Association , Washington, D.C.

AMA THUSSALAM .A, ABUBACKER M.N. , JAYABAL N.; Impact of sugar Mill Effluent on Ground Water : A case study . Journal of Indian Pollution Control. 18(2),119-124, 2002 .

CHATTERJI , C. & RAZIUDDIN M. (2002); Determination of water Quality index (WQI) of a degraded river in Ansaol industrial area ,P.O. Raniganj , distric Burdwan, West Bengal ,Nature Enviornment and Pollution Technology , 1(2) : 181 - 189 .

PRAJAPATI J.R. & RAOL B.V.; studies on the ground water Quality of Kalol city , Gujrat, India ,Nature, Environment and Pollution Technology.

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PREVALENCE OF SOIL- TRANSMITTED HELMINTHES IN THE PEOPLE OF KOSHI REGION OF THE NORTH BIHAR

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Declaration

Abstract

A total of 528 inhabitants of Koshi region (from 6 months to over 60 years of age.) of North Bihar were examined for soil –transmitted helminthiasis . Most of the inhabitants were found to be infected with either ascariasis or ancylostomiasis .However prevalence of Trichuris trichura was not common . STH were significantly more common among children and young adults from 6 months to 20 years of age where as the infection rate declined among the adults more than 25 years. Ancylostoma duodenale was the commonest helminth observed both in children and adult. Ascaris lumbricoides was the commonest type of infection reported in preschool and schooling children. However there were no significant differences in the distribution of STH among male and female inhabitants of koshi region. The socio–economic, environmental, poor sanitation and unhygienic condition contributing to persistently high rate of infection with STH among the human population of the Koshi region are discussed.

Keywords: STH infection, Koshi region of Bihar. Prevalence etc.

Introduction

soil transmitted helminthiasis refer to the intestinal worms infecting humans that are transmitted through the contaminated soil. Round worm (Ascaris lumbricoides), hook worm (Ancylostoma duodenale and Necator americanus), whip worm (Trichuris trichura) are the parasitic worm that causes STH. A large part of the world population is infected with one or more of these soil transmitted helminthes the world health organization (WHO) estimates that over one billion of the world population is chronically infested with STH. Soil transmitted

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helminthes infection is found mainly in areas with warm and moist climates (Wani et al 2009) where sanitation and hygiene are poor, including in temperate zones during warmer months. The high prevalence of this infestation is closely correlated to poverty, poor environmental hygiene and improvised health services. STH infestations are most common infestation among school age children and they tend to occur high intensity in this age group (Albonico M,Crompton DWT, Savioli L,1999) and (Savioli L, Bundy DAP, and Tomkins 1992). People with light soil transmitted helminthes infection usually have no symptoms. Heavy infection can cause a range of health problems including abdominal pain, diarrhoea blood and protetin loss, rectal prolapse etc.

Such nutritional deficiency of protein, folic acid, vitamin B12 may cause mortality and /or retarded growth in cognitive function and learning ability in children (Hotez and Pritchand 1995).Intrauterine growth retardation, prematurity and low birth weight among newborns born to infected mothers with STH (Nokes C and Bundy DAP 1994; Simeon DT and Grantham-McGregor S 1990.) Like other developing countries STH infestations is a public health problem in India. A study and the epidemiological survey on the prevalence of STH in Koshi region is important ,since they reflect the sanitary condition of area ,socioeconomic status of people ,climatic condition and poor level of personal hygiene and generate data that are essential to formulate strategies for the control of STH infestation among the inhabitants of Koshi region.

Methods and Materials

Study area is koshi region of Bihar state. This is a vast area starts from Darbhanga and extends up to Nepal. The ecosystem basis of this area is paddy field, wetland and marshes. The level of hygiene and sanitation is very poor. Most of the village houses are without latrines and people defecate in open fields and behind bushes and house yards. Most of the people are engaged with agriculture work. Proper water supply is not available .Source of drinking water are ponds or hand pumps or open well also.

Survey and Analysis

At the beginning of study, village programs were initiated to create awareness among the people. -SAMPLE SIZE

Data on the prevalence of helminthic diseases was not available from the present study area. SAMPLING DESIGN

The stool samples were collected from 528 subjects having 256 children, 124 males and 132 females and 272 adults, 128 males and 144 females of Koshi. Data was also collected on the living condition of the infected individual. STOOL SAMPLE COLLECTION

The purpose of study and the procedure for stool samples collection were explained to different people of the area. 116 preschool and 140 school going children were tested with the oral consent of their parents. 272 adults of different age group were examined. Stool containers were distributed to the subjects. Each faecal container was labeled with the name, age, sex of the participants and sampling location. The faecal samples were collected on the next morning and were brought back to the operation center for parasitological examination.

Each faecal sample was fixed with 10%formalin. Then formalin fixed samples were examined using formalin ether concentration technique at the parasitological laboratory within 12 hours for the cyst and ova of STH parasites.

Epidemiological survey was carried from July 2009 to June 2010. The subjects were randomly selected but school going children were from primary and upper primary schools of different villages, sub town and town area of Koshi region. 256 children were examined in which 116 were preschool and 140 were school going children. Among 272 adult, some were from rural, suburban and urban area of koshi region.

Results

A total of 528 stool samples were examined. Prevalence of helminthiasis in preschool and schooling children are 34.4% and 58.57% respectively(Table 1). According to age groups above 50% of school going children were found to be positive for STH(Table 2). The prevalence of STH according to gender in adults was 46.8% in males and 43.75% in female (Table 3).

Discussion

The prevalence of STH in the present study in the Koshi region was 39.39%. The prevalence of STH infection estimated in this study was quite similar to the previous study conducted in the two villages of Chitwan district, Nepal (Tai soon et al 2000).

In present study, we observed that overall, males had a higher prevalence (46.03%) than females (41.54%).This result was consistent with some findings of Lee et al 1999.Nevertheless, most of the previous findings proved that there was no significant difference with reference to prevalence for helminth infections, indicating there was no difference in socio-behavioral activity or immune status between males and females (Hesham Al-Mekhlafi et al 2006).

In current study STH cases were more common among the school children (58.57%) as compared to the preschool children (34.4%). The possible reasons for the prevalence differences between age groups observed in this study are most likely due to the activity and behavior of the children. The STH infection was common in school aged children because of their greater outdoor activities compared to the preschool children .They often play on the soil which was polluted with human faeces containing STH eggs and put their hands in their mouth without washing them.

In addition, the preschool children (1‘-6 years) were more supervised by their parents and spend more time at home which may reduce the chances of exposure to infection.

Few studies from the southern states have reported A.lumbricoides as the most common helminths among school children while other studies reported hookworm as the most common helminthes (Fernandez et al 1999, Wani et al 2010, Rayan 2010).

In present study, A.lumbricoides was the commonest among the children aged 1-14 years (25%). High intensity of ascariasis is more common in such children of Koshi who have no regular habits, pollute the house and surrounding areas. Infective eggs can easily reach other children who play on the ground and contaminate their hands and food .Majority of the Koshi region children were observed in the dirty clothes and unclean bodies including their fingernails. They failed to wash their hands thoroughly with soap and water after defecating.

Prevalence of STH infection is up to 50% of the examined samples in young adults aged 15-25 years. It is reduced to 32.29%in age group of 26-36 years. In people of 37-47 years the infection reduced to 29.16%. In people aged 48-58 years the infection rate declined to 25% of the examined case. This may be related to the fact that STH infections are remarkably depend upon human behavior, including personal hygiene, as well as personal awareness towards one’s health. In the people of >59 Year, prevalence of infection is only 5% of the subjects examined in the present study (Table 4). It is because of their confined life style.

The present findings of high prevalence of STH in the study area may be related to the poverty and logistic factor , the inhabitants of the region has to struggle with poor living conditions where basic amenities such as safe drinking water , proper sanitary and garbage disposal was inadequate or absent. Rivers and ponds play an important role as source of water for the daily activities such as washing clothes and utensils, bathing, cooking and drinking in the Koshi region. Proper toilet facilities are absent in the region and the children frequently

defecate indiscriminately near the bushes near their houses. Some of them also use the river and streams for defecation and use water to clean themselves. So, scarcity of basic infrastructure, unhygienic environment, consumption of improperly cooked contaminated food and water may contribute to high prevalence of STH in the region.

This preliminary study indicates that STH is still prevalent and this infection becomes one of the major public health problems among the Koshi region.

This calls for a well planned control measures including regular deworming of all the children and adult using effective broad spectrum antihelminthes such as albendazole, mebendazole etc, at regular interval and provision of food supplement (including vitamins and minerals) to them.

Meanwhile, health education is an important aspect in reducing the % of infection. Use of sanitary latrines, prevention of soil pollution and majors of personal prophylaxis such as wearing of protective foot wear and making use of health facilities for diagnosis and treatment should be the important agenda to design the long term STH control strategy.

Prevalence of STH infection according to gender and age among children of koshi region.

TABLE 1

Gender	Number of examined samples	Number of + VE samples	% Prevalence
Males	‘124	56	53.2%
Females	132	50	37.87%

TABLE 2

Age groups	No. of examined samples	No. of positive samples	Prevalence %
Preschool children (1-6 years)	116	40	34.4%
Schooling (7-14years)	140	82	58.57%

Number of children tested: 256
Number of children infected: 122
% of infection: 47.6%

TABLE 3 *Prevalence of STH infection according to age and gender among adults of Koshi region*

Gender	No. of examined samples	No. of positive samples	Prevalence %
Males	128	60	46.8 %
Females	144	63	43.75%

TABLE 4

Age groups	No. of examined samples	No. of +VE samples	Prevalence %
15-25	56	28	50 %
26-36	96	31	32.29 %
37-47	48	12	29.16 %
48-58	40	10	25 %
>59	32	5	15.6 %

Number of adults tested: 272
Number of adults infected: 86
% of infection: 31.61%

REFERENCES

ALBONICO M, CROMPTON DWT & SAVIOLI L. *Control stratergies for human intestinal helminth infections. Adv Parasitol 1999; 42:276-341.*

FERNANDEZ MC, VERGHESE S, BHUVANESWARI R, ELIZABETH SJ, MATHEW t, ANITHA A , CHITRA AK. PAUL I, GNANAMANI G, NALLAM NR. *Intestinal helminth infections among school children in Vishakhapatnam, Indian J Pediatr.1999; 66(5):669-73.*

HESHAM AI- MEKHAFI et al (2006); *An unceasing problem: Soil- transmitted helminthiases in rural Malaysian communities. Southeast Asian J. Trop Med. public health 38(6):998-1007.*

HOTEZ PJ, PRITCHAND DI (1995) *Hookworm infection. Sci. Am 272: 68-74*

LEE D.L. LEE; S.CHANG, M.S., POAN, A.J.& KATIP, J.T.(1999);*Intestinal helminth infections amongst school children in the Serian District of Sarawak. Med. J. Malaysia 54(1):96-101*

NOKES C & BUNDY DAP. *Does helminth infection affect mental processing and educational achievement ? Parasitol today 1994;10:14-18*

RAYAN P, VERGHESE S, MCDONNELL PA. *Geographical location and age affects the incidence of parasitic infestations in school children. Indian J Pathol Microbiol.2010; 53930:504-8.*

SAVIOLI L, BUNDY DAP & TOMKINS A. *Intestinal parasitic infections: a soluble public health problem. Trans R Soc Trop Med Hyg 1992; 86:353*-354.

SIMEON DT & GRANTHAM-MCGREGOR S. *Nutritonal deficiencies and children behaviour and mental development.Nutr Res Rev 1990;3:1-24*

TAI-SOON YONG, SEOBO SIM JONGWEON LEE, HEECHOUL OHRR ,MYUNG-Ho *Parasites infections in rural villages in Nepal , Korean J Parasitol 2000*; 38(4):275-257

WANI SA, AHMAD F, ZARGAR SA, AMIN A , DAR ZA, DAR PA . *Intestinal helminthiasis in children of gurez valley of Jammu and Kashmir state, India. J Glob Infect Dis.2010;53(3):504-8*

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INVESTIGATION ON EFFECTS OF MERCURY AND LEAD BHASMAS (AYURVEDIC DRUGS) IN PATIENTS WITH NEPHROPATHY

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AND SHIVENDRA SINGH******

Declaration

The Declaration of the authors for publication of Research Paper in The Indian Journal of Research Anvikshiki ISSN 0973-9777 Bi-monthly International Journal of all Research: We, *Aashish Parekh, Praveen Kumar, Subhash Chandra, R.G. Singh, Usha and Shivendra Singh* the authors of the research paper entitled INVESTIGATION ON EFFECTS OF MERCURY AND LEAD BHASMAS (AYURVEDIC DRUGS) IN PATIENTS WITH NEPHROPATHY declare that , We take the responsibility of the content and material of our paper as We ourself have written it and also have read the manuscript of our paper carefully. Also, We hereby give our consent to publish our paper in Anvikshiki journal , This research paper is our original work and no part of it or it's similar version is published or has been sent for publication anywhere else.We authorise the Editorial Board of the Journal to modify and edit the manuscript. We also give our consent to the Editor of Anvikshiki Journal to own the copyright of our research paper.

Abstract

Mercury and lead poisoning have severe chronic kidney disease, including asymptomatic urinary abnormalities, nephritic syndrome, acute and chronic renal failure etc. For the treatment of these diseases, multiple metal chelators like meso-2, 3-dimercaptosuccinic acid (DMSA) and 2, 3-dimercaptopropanesulphonate (DMPS) are most commonly used to deposit the mercury as well as lead into the urine. In past one decade, different ayurvedic medications are used to treat various kidney diseases. Bhasmas is a calcinated preparation in which the gem or metal is converted into ash. It is commonly used as ayurvedic medicine against many diseases. The bhasmas products of metals and gems in a very fine powdered form, mainly oxides, made in elaborate calcination process perfected some centuries ago. Bhasmas was analyzed for its metal contents using atomic absorption spectrometry (AAS). We used mercury and lead bhasmas to cure chronic kidney diseases. Significant effect was observed by lead and mercury bhasmas on chronic kidney diseases.

Keywords: Lead, Mercury, Nephropathy, Bhasmas, Ayurvedic drug.

Introduction

Chronic kidney disease is a worldwide public health problem [1]. Various factors including mercury, lead and cadmium are found to be responsible for high incidence of end stage renal disease (ESRD). These factors are known to produce various injuries with asymptomatic urinary abnormalities, nephritic syndrome, acute and

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chronic renal failure. Toxic nephropathy is being increasingly recognized as a cause of renal failure. Mercury and Lead compounds chelating agents are widely used in the treatment of intoxications. The comparatively new chelator's meso-2, 3-dimercaptosuccinic acid (DMSA) and 2, 3-dimercapto-propanesulphonate (DMPS) can successfully deposit mercury as well as of lead into the urine [2]. About 10% of total mercury salt taken in food is absorbed in intestinal tract which finally deposit into the kidney, a target organ for Hg^{+} and Hg^{++} [3,4]. In contrast, the net maintenance of elemental mercury vapour (Hg) is significantly high (about 80%). Significantly increased urinary mercury and progressively lowered body burden of mercury during and after three courses of DMPS treatment has been reported [5]. Due to the low toxicity and high efficiency of DMSA and DMPS, both compounds are selected as the antidotes in various forms of mercury poisoning [6]. Experimental as well as restricted human data specify that DMPS is a highly successful chelating anti-dote in acute and chronic intoxications with inorganic Hg compounds, including elementary Hg vapour [7] Lead (Pb), commonly industrial uses in alloys, pigments and other applications [8]. The recommendation of chelation treatment with DMSA in severe lead poisonings is based on human case and cohort study and on animal experiments. There is information that the repeated treatments with EDTA retarded the succession of chronic renal diseases following environmental lead exposure and thus did not induce nephropathy [9,10]. Chelation treatment, clinical indices of lead poisoning had stabilized or improved in all patients [11]. Lead and mercury exposures of the human being and their harmful effects have been studied [12]. The absorption of inorganic compounds of mercury in the human being is poor to moderate when administered orally. Lead in both its inorganic and organic form is absorbed through the gastrointestinal tract. Once absorbed, it manor up in liver, kidneys and excreted through the kidneys [13]. Many ayurvedic drugs are valuable to treat liver and kidney diseases and Bhasmas is commonly used against many diseases. The bhasmas products of metals and gems in a very fine powdered form, mainly oxides, made in elaborate calcination process perfected some centuries ago [14]. Bhasmas was analyzed for its metal contents using atomic absorption spectrometry [15]. An infrared spectroscopy (IR) was performed that revealed it to be free of any organic compounds. Its acute oral administration does not show any mortality or toxicity in experimental animals. It has been reported that bhasmas has antioxidant property also. Present study assesses the effects and status of Mercury and Lead Bhasmas in nephropathy patients.

Materials and Methods

Study population; This study included 25 subjects (case 1) age group between 16 to 70 years, admitted in Department of Nephrology, Sir Sunder Lal Hospital, Banaras Hindu University, Varanasi, from October 2005 to December 2007. Out of 25 subjects in case 1, 10 subjects taken Ayurvedic drugs (Bhasmas) and followed for 6 months were considered as cases 2. 25 healthy subjects enrolled as controls. Each subject completed a detailed health examination, blood and urine samples were collected center for clinical investigation. All biochemical analysis were performed in Biochemical analyser. *(Cobas Integra 400 Plus).* The study was approved by Institute of Medical Sciences, human research Ethics committee, Banaras Hindu University Varanasi, India. Each participants were thoroughly informed about the objectives of the study, as well as the risks and precaution.

Sampling; Blood for the examination of mercury (Hg) and lead (Pb) was drawn into polyethylene tubes containing heparin as anticoagulant and stored at –20°C Deep freezer. Serum samples were obtained after centrifugation (3000 × g, 10 min) were stored at –20°C deep freezer until analyzed for creatinine [16].

Early morning urine samples were collected in 50 ml polypropylene tubes and centrifuged at 1500 × g for 10 min to clear them of particulate matter. Each person took 4 grams of sodium bicarbonate dissolved in water the night before the morning on which urine was collected. The pH of the urine was checked and adjusted to 5.5–7.5 using 1 N NaOH and stored at –20°C. For analysis of Hg, and Pb, 10 ml of urine was stored

in acid-washed polypropylene tubes at –20°C. For urinary enzyme analysis, ethylene glycol was added to a final concentration of 30% (v/v) to the urine, the pH was adjusted to 7 using 1 N NaOH, and the samples were stored at –20°C [17]. Urine samples for the analysis of albumin and creatinine were mixed with sodium azide (0.1% w/v) and stored at 4°C.

Measurements of Mercury and Lead; Heavy metals in blood and urine sample were analysis atomic measurements are carried out with Perkin Elmer model 400/HGA900/AS800 coupled with mercury hydrogen system -15 (MHS-15). Argon gas is used as carrier gas for purging purposes of graphite furnace to the analysis of mercury hydrogen system (MHS-15). Mercury analysis by cold vapour method using mercury hydride system (MHS-150). After calibrating the instrument with prepared working standard, the 10ml of digested liquid sample is pipette out to a specific container of mercury hydride system analyzer following by adding 10ml 1.5% of HCL as diluents for each flask and blank, 3% of $NaBH_4$ solution in 1% of NaOH in reaction flask. Lead analysis by flame Atomic absorption spectrophotometer (AAS) / Graphite furnace, after calibrating the instrument with prepared working standard, the digested furnace with specific instrumental condition as given by instrument manufacturer. Introduce the solution into flame, record the reading, using the mean of the three reading. The quantity of concentration of the respective metal is provided after verifying the programmed calibration of the reading with the standard calibration curve of the respective element obtained from concentration vs. absorbance of the prepared known concentration on the analysis.

Renal function; Each subject underwent a detailed health examination in, including systolic blood pressure and diastolic blood pressure. Analysis included hemoglobin, sodium, potassium, chloride, calcium, phosphate and blood urea nitrogen, serum creatinine and protein levels. We collected blood and urine samples in biochemical analysis We investigated the lifestyle of each subject (cigarette smoking and alcohol drinking), medical history (diabetes, and hypertension) and basic demographic information (age, sex, work years) through questionnaires.

Statistical analysis; Subjects with estimated GFR levels less than 60 ml/min/1.73 m2 were regarded as part of the renal disease case group, and subjects with estimated GFR levels greater than 60 ml/min/1.73 m2 were in the healthy control group. We compared mercury and lead levels, in blood and urine sample. Data were analyzed using SPSS, version 16 (SPSS Inc., Chicago, IL). The Chi-square and Fisher's exact tests were used when appropriate. A p-value$\leq$0.05 was considered to be statistically significant.

Result

T A B L E 1 *Demography and clinical parameters for controls and cases.*

Parameters	Groups		P-value
	Controls	Case-1	
Age (Year)	38.88±15.16	38.44±16.90	0.923
Weigh(kg)	58.40±8.82	53.80±08.61	0.068
SBP(mmHg)	132.96±17.68	143.76±40.81	0.231
DBP(mmHg)	75.20±10.77	84.48±17.58	0.029
Hb (gm %)	12.77±2.68	7.95±298	0.061
Creatinine (mg %)	0.98±0.32	6.85±3.25	0.000
Urea (mg %)	28.0±22.38	140.88±66.54	0.000
Glucose (mg %)	09.16±19.23	92.56±21.96	0.683
Protein 24hr Mg/day	231±166.77	1464±2682	0.026
Sodium (meq/l)	138.68±4.79	129.80±6.17	0.003
Potassium (meq/l)	4.37±0.60	4.75±1.18	0.162
Chloride (meq/l)	100.00±4.76	97.80±8.21	0.128
Calcium (mg/dl)	100.00±4.76	7.80±0.94	0.250
Phosphate (mg/dl)	3.97±0.85	6.55±2.30	0.000

T A B L E 2 *Status of heavy metal in blood and urine of control and cases.*

Groups	Blood Status		Urine Status	
	Mercury	Lead	Mercury	Lead
Case-1	1.95±0.88	9.5±3.18	2.60±0.32	2.55±0.27
Control	1.38±0.55	5.40±1.70	2.50±0.28	2.30±0.74
P value	0.009	0.000	0.086	0.129

T A B L E 3 *Status of heavy metal in blood and urine after 6 months treatment with ayurvedic drug (Bhasmas).*

Groups	Blood Status		Urine Status	
	Mercury	Lead	Mercury	Lead
Cases-2	1.90±0.73	7.00±3.50	2.55±0.18	2.69±0.22
Control	1.38±0.55	5.40±1.70	2.50±0.28	2.30±0.74
P value	0.029	0.074	0.602	0.169

Clinical parameters of Controls and Cases; Values of clinical parameters like blood pressure (both systolic and diastolic), haemoglobin, creatinine, urea, glucose and 24 hours protein of cases and control were analysis by biochemical analyzer. Serum phosphate was significantly increased in cases than controls (6.55±2.30 and 3.97±0.85mg/dl respectively, p-value < 0.001), while increase in calcium was non-significant (7.80±0.94 and 3.97±0.85 mg/dl respectively, p-value = 0.250). Serum sodium was significantly decreased (p-value = 0.003), while decrease in potassium and chloride were non-significant in cases than controls (p-value= 0.162, and 0.128 respectively). *(Table-1)*

Status of heavy metal in blood and urine of control and cases; Analysis of heavy metal case-1 and control in blood status of mercury significantly increase in case then controls (1.95±0.88 and 1.38±0.55 respectively, p-value=0.009), while increase in lead was significant (9.5± 3.18 and 5.40± 1.70 p-value=0.000). Analysis of heavy metal in urine status of mercury non- significant increases in case then controls (2.60±0.32 and 2.50±0.28 respectively, p-value=0.086), while lead non- significant increases in case then controls (2.55±0.27 and 2.30±0.74 respectively, p-value=0.129). *(Table-2)*

Status of heavy metal in blood and urine after 6 months treatment with Bhasmas; Analysis of heavy metal case-2 and control in blood status of mercury non-significantly increase in case then controls (1.90±0.73and 1.38±0.55 respectively, p-value=0.029), while increase in lead was non-significant (7.00±3.50 and 5.40±1.70 respectively p-value=0.074). Analysis of heavy metal in urine status of mercury non- significant increases in case then controls (2.55±0.18 and 2.50±0.28 respectively, p-value=0.602), while lead non-significant increases in case then controls (2.69±0.22 and 2.30±0.74 respectively, p-value=0.169). *(Table-3)*

Discussion

World Health Organization report about 70–80% of the world populations rely on non conventional medicines mostly of herbal sources in their healthcare [18]. There is a common misconception that use of herbal drugs does not create any bad effects. While various laboratory show that only level above 150 µg/l should be considered toxic, there is strong data that early signs of mercury intoxication can be seen in workers excreting more than 50 µg Hg/l of urine (standardized for a urine creatinine of 1 gram/l). In unexposed individuals, the amount of mercury in blood is usually less than 2 µg/100ml. According to some experts an average airborne concentration of 50µg/m3 corresponds to a mercury concentration in blood of about 3-3.5mg/100ml. Early effects to mercury toxicity have been found when the blood concentration exceeds 3 µg/100ml.

In your study which comprises of non fish eating people we found mean blood mercury level of 0.175 µg/dl or 0.175 µg/l (range 0.04 to 3.62). The mean urinary mercury level also within normal limits (< 20µg/l) with

no value exceeding the upper limit of normal range. There was no patients in our cohort involved in high risk industry know to involve use of mercury moreover fish rarely forms port of diet of the study population. Higher blood mercury level patients taking ayurvedic Bhasmas case2 normal renal function. Some of the Bhasmas transitionally uses involved of mercury including shankh however when properly uses in proper doses they rarely exceed the upper limit of normal and similar finding was noted in your study. No patients taking Bhasmas was found to have clinical or biochemical evidence of mercury toxicity.

Several epidemiology studies constantly reported that workers with a heavy industrial exposure to lead incident bigger risk of death through chronic renal failure [19-23]. There is also some evidence that occult lead poisoning may contribute to renal deficiency in patients with gout and crucial hypertension [24].

Blood lead levels as reported from different countries from 22.8 µg/l to as high as 108 µg/l [25]. In India in a study conducted by Mohamed Abdulla and Catherine Suck 2004, analysis blood samples from Delhi showed a blood lead levels (mean and range) of 13.6 (7.1-20.5) µg/dl.

In your study the mean blood level in healthy control was 05.4±01.7 µg/dl. In patient taking ayurvedic Bhasmas but with normal renal function, patients with renal failure of known and unknown cause had levels of 7.0±3.5, 8.9±5.0 and 9.5±3.8 µg/dl respectively. Overall the range was 3.2 to 26.5 µg/dl. The maximum value was in patients of diabetic nephropathy who is a trader normally visiting towns. Even through patient on ayurvedic drugs had increased level than their counterparts it was statically in significant. Patient with renal failure of known and unknown etiologic had significantly higher values then the healthy counterparts but all value was less than the toxic limit (40 µg/dl for adults). Major source of lead is automobile exhaust with use of unleaded petrol the blood level have significantly reduce but around the world achieve toxic level in certain predisposed professions. Current data indicates that one should strive for levels lower than 2.0 µg/dl for better clinical outcome as mentioned above.

Increased urinary lead excretion indicates excessive lead exposure regardless in clinical presentation. Erythrocyte protoporphyrin and whole blood lead level probably more sensitive indicator of excessive lead exposure however urinary lead in many study has been utilized for detection of lead burden in body. Most studies lead was mobilized by giving chelators like ethylene diamine tetra acetic acid (EDTA) before assessing lead burden but some workers utilized unchelated urine for assessment. Value of urinary lead level has been variable depending upon the type of population studies. In spot urine sample from non smoker Japanese women of low risk shown mean value of 1.06 µg/l [26]. The urinary lead values of QC workers and production worker were 48.0 ±7.9 and 52.2 ± 19.1 μgl^{-1} in this study. Value below 50µg/l and <600 µg/l after 1gm chelation with EDTA is considered as normal.

In our study we found mean urinary lead of 7.00 ± 3.50 μgl^{-1}. it was statically in significant in patient and controls and the levels noted were on the lower side of the normal range. The region for this finding remains obscure but probably reflects the insensitiveness of the test

Reference

[1.] Grucciorodi A. Executive summary, KDOQI guidelines. AJKD 2004; 43:05:14-19

[2.] CaoY, Skaug MA, Andersen O, Aaseth J. Chelation Therapy in Intoxications with Mercury, Lead and Copper. Journal of Trace Elements in Medicine and Biology, 2014.

[3.] Berlin M, Zalups R, Fowler B, Nordberg G, Fowler M, Nordberg M, Friberg L, editors. Handbook on the toxicology of metals. New York: Elsevier, 2007.

[4.] Bridges CC, Zalups RK. Transport of inorganic mercury and methylmercury in target tissues and organs. Journal of toxicology and environmental health Part B Critical reviews, 2010; 13(5):385-410.

[5.] Gonzalez RD, Zuniga CM, Narro JA, Molina RY, Hurlbut KM, Dart RC. Aposhian HV. DMPS (2, 3-dimercaptopropane-1-sulfonate, dimaval) decreases the body burden of mercury in humans exposed to mercurous chloride. The Journal of pharmacology and experimental therapeutics, 1998; 287(1):8-12.

[6.]Flora SJ, Pachauri V. Chelation in Metal Intoxication. Int J Environ Res Public Health, 2010; 7(7):2745-2788.

[7.]Bose O, Reilly S, Drasch G, Beinhoff C, Maydl S, Vosko MR, Roider G, Dzaja D. The Mt. Diwata study on the Philippines 2000-treatment of mercury intoxicated inhabitants of a gold mining area with DMPS (2, 3-dimercapto-1-propane-sulfonic acid, Dimaval). The Science of the total environment, 2003; 307:71-82.

[8.]Breeher L, Gerr F, Fuortes L. A case report of adult lead toxicity following use of Ayurvedic herbal medication. J Occup Med Toxicol, 2013; 8(1):26.

[9.]Graziano JH, Leong JK, Friedheim E. 2, 3-Dimercaptosuccinic acid: a new agent for the treatment of lead poisoning. The Journal of pharmacology and experimental therapeutics 1978; 206(3):696-700

[10.]Chen KH, Lin JL, Lin-Tan DT, Hsu HH, Hsu CW, Hsu KH, Yen TH. Effect of chelation therapy on progressive diabetic nephropathy in patients with type 2 diabetes and high-normal body lead burdens. Am J Kidney Dis, 2012; 60(4):530-538.

[11.]Fournier L, Thomas G, Garnier R, Buisine A, Houze P, Pradier F, Dally S. 2,3 Dimercaptosuccinic acid treatment of heavy metal poisoning in humans. Med Toxicol Adverse Drug Exp, 1988; 3(6):499-504.

[12.]Brodkin E, Copes R, Mattman A, Kennedy J, Kling R & Yassi A, Lead and mercury exposures: Interpretation and action, Can Med Assoc J, 2007;176 (1):59-63.

[13.]Parashuram BT, Priti BC, Jaywant TJ, Aruna AK. Curative effect of abhrak bhasma on liver and kidney function in carbon tetrachloride intoxicated albino rats, Int. J. Bioassays, 2014, 03 (01), 1624-1629.

[14.]Kapoor RC. Some observations on the metal-based preparations in the Indian Systems of Medicine; Indian Journal of Traditional Knowledge, 2010; 9:562-575.

[15.]Mitra A, Chakraborty S, Auddy B, Tripathi P, Sen S, Saha A V & Mukherjee B. Evaluation of chemical constituents and free-radical scavenging activity of Swarnabhasma (gold ash), an Ayurvedic drug, J Ethnopharmacol, 2002;(80) 147-153.

[16.]Wael I, Mohamed A. Sobh1adfg, Mohamed M. El-Defrawy2cdf., The exposure to cadmium, lead and mercury from smoking and its impact on renal integrity., Med Sci Monit, 2004; 10(3): 112-116

[17.]Maruhn D, Wehling K, Metz U: A stable liquid control material for urinary enzyme assay. Clin Chim Acta, 1986; 160: 119-22

[18.]Chan K. Some aspects of toxic contaminants in herbal medicines. Chemosphere, 2003; 52(9):1361–71.

[19.]Cooper, W.C. & Gaffey, W.R. Mortality of lead workers. J. Occup. Med, 1975; 17:100-109.

[20.]Malcolm, D. & Barnett, H.A.R. (1982). A *Mortality Study* of *Lead Workers 1925-76. Br J Ind. Med, 1925; 39: 404-410.*

[21.]McMichael, Johnson AJ, H.M. Long term mortality profile of heavily-exposed lead smelter workers. J. Occup. Med, 1982; 24:375-378.

[22.]Davies JM. Long term mortality study of chromate pigment workers who suffered lead poisoning. Br.J. Ind. Med, 1984; 41:170-178.

[23.]Cooper, WC, Wong O, Kheifets L. Mortality among employees of lead battery plants and lead producing plants. Scand. J. Workenviron. Health, 1985; 11:331-345.

[24.]Batuman V, Maesaka J, Haddas B, Tepper E, Landy E. Wedeen RP. The role of lead in gout nephropathy. New Engl. J. Med, 1981; 304:520-523.

[25.]Lopez M, Burgoa C, Rios C, Avila M, Romieu I. Rojas, Santos, Hernandez. Use of lead-glazed ceramics is the main factor associated to high lead to blood levels in two maxican rural communities. J. Toxicol Environ Health, 1994; 42(1):45-52.

[26.]Fukui Y, Ezaki T, Tsukahara T, Moriguchi J, Furuki K, Okamoto S, Ukai H, Ikeda M**.** Lead levels in urine of never-smoking adult women in non-polluted areas in Japan, with references to cadmium levels in urine. In Health, 2004; 42 (4):415-23.

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UNSTEADY GENERAL COUETTE FLOW BETWEEN TWO PARALLEL POROUS PLATES WITH TIME DEPENDENT PRESSURE GRADIENT

DR. SHANKER KUMAR*AND DR. KRISHNANDAN PD. SINGH**

Abstract

In this paper we study the problem of unsteady flow of a viscous incompressible fluid between two porous parallel flat plates, one in uniform motion and the other at rest with uniform suction at the stationary plate and an equal injection at the other in uniform motion when the pressure gradient is a linear function of time.

Keywords : unsteady laminar flow, Navier-Stokes equation.

1. Governing Equations

Let the flow of an incompressible fluid with constant velocity be laminar, unsteady and two dimensional. Let the axis of *x* be taken along the lower wall and *y* axis at right angle to it. Let *u* and *v* represent the velocity component along *x* and *y* directions respectively. In the present problem the laminar flow of a viscous incompressible fluid confined between two parallel porous flat plate, one of which is at rest and other moving in its own plane with uniform velocity *U*. If a small uniform suction and an equal injection be imposed at the stationary plate and the plate in motion. The Navier-Stokes equations in absence of body forces together with equation of continuity are

$$\frac{\partial u}{\partial t}+u\frac{\partial u}{\partial x}+v\frac{\partial u}{\partial y}=-\frac{1}{\rho}\frac{\partial p}{\partial x}+\upsilon\left[\frac{\partial^2 u}{\partial x^2}+\frac{\partial^2 u}{\partial y^2}\right] \qquad (1)$$

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$$\frac{\partial v}{\partial t}+u\frac{\partial v}{\partial x}+v\frac{\partial v}{\partial y}=-\frac{1}{\rho}\frac{\partial p}{\partial x}+\upsilon\left[\frac{\partial^2 v}{\partial x^2}+\frac{\partial^2 v}{\partial y^2}\right] \tag{2}$$

and $$\frac{\partial u}{\partial x}+\frac{\partial v}{\partial y}=0 \tag{3}$$

Boundary conditions are

$$\left.\begin{aligned} &t>0, \quad \text{for } y=0,\\ &u(0,t)=0\\ &v(0,t)=v_0<0, \qquad \text{(suction)}\\ &\text{for } y=h\\ &u(h,t)=U\\ &v(h,t)=v_0<0, \qquad \text{(injection)} \end{aligned}\right\} \tag{4}$$

where v_0 being constant and h is the distance between the plate.
It assumed that the longitudinal velocity is independent of x, so that

$$\frac{\partial u}{\partial x}=0 \tag{5}$$

As the suction is uniform

$$\left.\begin{aligned} &\frac{\partial v}{\partial t}=0\\ &\frac{\partial v}{\partial x}=0\\ &\text{and hence } \frac{\partial^2 v}{\partial x^2}=0 \end{aligned}\right\} \tag{6}$$

Thus using (5) equation (3) becomes

$$\left.\begin{aligned} &\frac{\partial v}{\partial y}=0\\ &\frac{\partial^2 v}{\partial y^2}=0 \end{aligned}\right\} \tag{7}$$

The pressure p is independent of y. Thus equation (1) becomes

$$\frac{\partial u}{\partial t}+v_0\frac{\partial u}{\partial y}=-\frac{1}{\rho}\frac{\partial p}{\partial x}+\upsilon\frac{\partial^2 u}{\partial y^2} \tag{8}$$

Now,

$$\left.\begin{aligned}\frac{\partial u}{\partial t}&=\frac{U\upsilon}{h^2}\frac{\partial \bar{u}}{\partial t}\\ \frac{\partial u}{\partial y}&=\frac{U}{h}\frac{\partial \bar{u}}{\partial \eta}\\ \frac{\partial^2 u}{\partial y^2}&=\frac{U}{h^2}\frac{\partial^2 \bar{u}}{\partial \eta^2}\\ \frac{\partial p}{\partial y}&=\frac{\mu U}{h^2}\frac{\partial \bar{p}}{\partial \bar{x}}\end{aligned}\right\} \tag{9}$$

The equation (8) with the help of (9) becomes

$$\frac{\partial u}{\partial t}+\frac{\partial \bar{u}}{\partial \eta}=-\frac{\partial \bar{p}}{\partial \bar{x}}+\frac{\partial^2 \bar{u}}{\partial \eta^2} \tag{10}$$

Where suction parameter $\sigma=\frac{v_0 h}{\upsilon}$.

Boundary condition (4) becomes

$$\left.\begin{aligned}\bar{u}(0,\bar{t})&=0, \quad \eta=0\\ \bar{u}(1,\bar{t})&=1, \quad \eta=1\end{aligned}\right\} \tag{11}$$

2. Method of Solution

From equation (10)

$$\left.\begin{aligned}\frac{\partial \bar{u}}{\partial \bar{t}}&=\bar{u}_0(\eta)f'(\bar{t})-\bar{u}_1(\eta)f''(\bar{t})\\ \frac{\partial \bar{u}}{\partial \eta}&=\bar{u}_0(\eta)f(\bar{t})-\bar{u}_1(\eta)f(\bar{t})\\ \frac{\partial^2 u}{\partial \eta^2}&=\bar{u}_0''(\eta)f(\bar{t})-\bar{u}_1''(\eta)f(\bar{t})\end{aligned}\right\}$$

$$\frac{\partial \bar{u}}{\partial \bar{t}}+\sigma\frac{\partial \bar{u}}{\partial \eta}-\frac{\partial^2 \bar{u}}{\partial \eta^2}=-\frac{\partial \bar{p}}{\partial x} \tag{12}$$

Let $-\frac{\partial \bar{p}}{\partial x}=f(\bar{t})$ (13)

and $\bar{u}(\eta,\bar{t})=\bar{u}_0(\eta)f(\bar{t})-\bar{u}_1(\eta)f(\bar{t})$ (14)

Now,

(15)

From equation (13) and (15) in equation (10) we get

$$\bar{u}_1 f'' + f'(\sigma\bar{u}_1' - \bar{u}_0 - \bar{u}_1'') + f(1 - \sigma\bar{u}_0 + \bar{u}_0'') = 0 \tag{16}$$

Thus we have

$$f''(\bar{t}) = 0, \qquad (\text{for all } \bar{t}) \tag{17}$$

(18)

and $$\sigma\bar{u}_1' - \bar{u}_0 - \bar{u}_1'' = 0 \tag{19}$$

$$f''(\bar{t}) = 0$$

From (17) which gives

(20)

Where *A* and *B* are dimensionless constant. Thus from (13) and (20)

(21)

Again, (18)

$$\bar{u}_0''(\eta) - \sigma\bar{u}_0'(\eta) = -1 \tag{22}$$

Boundary conditions are

$$\left.\begin{aligned} \bar{u}_0(0) &= 0, \quad \text{for} \quad \eta = 1 \\ \bar{u}_0(1) &= 1, \quad \text{for} \quad \eta = 1 \end{aligned}\right\} \tag{23}$$

From (22)

$$\frac{d^2\bar{u}_0}{d\eta^2} - \sigma\frac{d\bar{u}_0}{d\eta} = -1$$

put $\dfrac{d\bar{u}_0}{d\eta} = z$

The above differential equation assume the form

$$\frac{dz}{d\eta} - \sigma z = -1 \tag{24}$$

Solution of (24) is given by

$$\frac{d\bar{u}_0}{d\eta}e^{-\sigma\eta} = K - \frac{e^{-\sigma\eta}}{\sigma} \tag{25}$$

The solution of differential equation (25) is given by

$$\bar{u}_0 = \frac{\eta}{\sigma} + \frac{K}{\sigma} e^{\sigma\eta} + L \tag{26}$$

where K and L are constant of integration using the boundary conditions, we have

$$\left.\begin{aligned} K &= -\frac{1}{e^{\sigma} - 1} \\ L &= \frac{1}{\sigma(e^{\sigma} - 1)} \end{aligned}\right\} \tag{27}$$

Thus the solution of differential equation (22) is given by

$$\bar{u}_0 = \frac{\eta}{\sigma} - \frac{1}{\sigma(e^{\sigma} - 1)} e^{\sigma\eta} + \frac{1}{\sigma(e^{\sigma} - 1)} \tag{28}$$

and it also becomes

$$\frac{d^2\bar{u}_1}{d\eta^2} - \sigma\frac{d\bar{u}_1}{d\eta} = -\frac{\eta}{\sigma} + \frac{e^{\sigma\eta}}{\sigma(e^{\sigma} - 1)} - \frac{1}{\sigma(e^{\sigma} - 1)} \tag{29}$$

Boundary conditions are

$$\left.\begin{aligned} \bar{u}_1(0) &= 0, \quad \eta = 0 \\ \bar{u}_1(1) &= -\frac{1}{B}, \quad \eta = 0 \end{aligned}\right\} \tag{30}$$

The solution of (29) is given by

$$\begin{aligned} \bar{u}_1(\eta) = {} & \frac{\eta^2}{2\sigma^2} + \frac{\eta}{\sigma^3} + \frac{\eta}{\sigma^2(e^{\sigma} - 1)} + \frac{M}{\sigma} e^{\sigma\eta} \\ & + \frac{1}{\sigma(e^{\sigma} - 1)}\left[\frac{\eta}{\sigma} e^{\sigma\eta} - \frac{1}{\sigma^2} e^{\sigma\eta}\right] + N \end{aligned} \tag{31}$$

where

$$\left.\begin{aligned} M &= -\frac{\sigma}{B(e^{\sigma} - 1)} - \frac{3e^{\sigma} + 1}{2\sigma(e^{\sigma} - 1)^2} \\ N &= \frac{1}{\sigma^3(e^{\sigma} - 1)} + \frac{1}{B(e^{\sigma} - 1)} + \frac{3e^{\sigma} + 1}{2\sigma^2(e^{\sigma} - 1)^2} \end{aligned}\right\} \tag{32}$$

From (31) and (32), we get

$$\bar{u}_1(\eta) = \frac{\eta^2}{2\sigma^2} + \frac{\eta}{\sigma^3} + \frac{\eta(e^{\sigma\eta}+1)}{\sigma^2(e^{\sigma}-1)} - \frac{e^{\sigma\eta}-1}{\sigma^3(e^{\sigma}-1)} - \frac{1}{B}\frac{e^{\sigma\eta}-1}{e^{\sigma}-1} - \frac{3e^{\sigma}+1}{2\sigma^2(e^{\sigma}-1)^2}(e^{\sigma\eta}-1) \tag{33}$$

Now substituting the value of $\bar{u}_0(\eta)$ and from (28) and (33) in (14) and using (20), we get

(34)

Thus (34) represents the complete solution for the longitudinal velocity in the present case when $\sigma \neq 0$, i.e. when the wall are porous.

References

MISHRA, B.N. & CHOUDHARY, R.C. (1971) : Plane couette flow with pressure gradient & suction. Rau. Univ. Math. Jour. Vol. 2.

NANDA, R.S. & JAIN, M.K. (1960) : Viscous flow near a stagnation point with suction. J. Sci. Eng. Res. 387-394.

SINHA, K.D. & CHOUDHARY, R.C. (1965) : Flow of viscous in compressible fluid between two parallel plates, one in uniform motion and other at rest with suction at the stationary plate. Proc. Ind. Acad. Sci. Soci. 61, 308-18.

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BOUNDARY LAYER ALONG A POROUS WALL IN SOURCE FLOW

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Declaration

The Declaration of the authors for publication of Research Paper in The Indian Journal of Research Anvikshiki ISSN 0973-9777 Bi-monthly International Journal of all Research: We, ***Shanker Kumar and Krishnandan Pd. Singh*** the authors of the research paper entitled BOUNDARY LAYER ALONG A POROUS WALL IN SOURCE FLOW declare that , We take the responsibility of the content and material of our paper as We ourself have written it and also have read the manuscript of our paper carefully. Also, We hereby give our consent to publish our paper in Anvikshiki journal , This research paper is our original work and no part of it or it's similar version is published or has been sent for publication anywhere else.We authorise the Editorial Board of the Journal to modify and edit the manuscript. We also give our consent to the Editor of Anvikshiki Journal to own the copyright of our research paper.

Abstract

In the present analysis an attempt has been made to study the boundary layer of an incompressible fluid in source flow. The joint use of the momentum integral and kinetic energy integral equation to solve boundary layer equation gives result with sufficient accuracy. The momentum integral equation, the K.E. integral equation and wall compatibility condition in non-dimensional form have been derived.

Notation

x = radial distance from the source along the wall

$\frac{a}{x}$ = distance of the edge of the wall from the source

$\frac{x}{a}$ = non-dimensional radial distance

y = distance normal to the wall
u = velocity in the boundary layer in x-direction
v = velocity in y-direction
$U(x)$ = potential flow velocity

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u_0 = entrance velocity at the edge of the wall

$$U(\bar{x}) = \frac{U(x)}{U_0}$$

Source Flow

(Solution with the aid of Pohl Hausen's Profil P_4)

In case for laminar incompressible flow in source flow, the potential velocity is $U(x) = U_0 \frac{a}{x}$.

Let $\bar{x} = \frac{a}{x}$, the non-dimensional radial distance

$$\bar{U} = \frac{U}{U_0} = \frac{U_0 \frac{a}{x}}{U_0} = \frac{a}{x} = \frac{1}{\bar{x}} \tag{1}$$

$$t^* = \left(\frac{\theta}{a}\right)^2 \frac{U_0 a}{\upsilon} \tag{2}$$

$$\Delta = \frac{\theta^2}{\upsilon}\frac{dU}{dx} = t^* \frac{d\bar{U}}{d\bar{x}} = -\frac{t^*}{\bar{x}^2} \tag{3}$$

$$\bar{V}_s = \frac{V_s}{U_0}\sqrt{\frac{U_0 a}{\upsilon}} \tag{4}$$

$$\lambda = \frac{V_s \theta}{\upsilon} = t^{*\frac{1}{2}} \bar{V}_s \tag{5}$$

$$\frac{dt^*}{d\bar{x}} = f(\bar{x}, H_\varepsilon, t^*) = 2\bar{x}\left\{1 + \frac{(2+H)t^*}{\bar{x}^2} + t^{*\frac{1}{2}}\bar{V}_s\right\} \tag{6}$$

$$\frac{dH_\varepsilon}{d\bar{x}} = g(\bar{x}, H_\varepsilon, t^*) = \frac{x}{t^*}\left[2D - H_\varepsilon\left\{\begin{matrix}1 + \frac{(H-1)t^*}{\bar{x}^2} \\ + t^{*\frac{1}{2}}\bar{V}_s + t^{*\frac{1}{2}}\bar{V}_s\end{matrix}\right\}\right] \tag{7}$$

and $m = \frac{t^*}{\bar{x}^2} + t^{*\frac{1}{2}}\bar{V}_s$ (8)

At the starting point the boundary layer parameters are

$\bar{x} = 1, \quad \bar{U} = 1, \quad t^* = 0, \quad \lambda = 0, \quad \wedge = 0$

Hence $m = 0$, from equation (8)

H_ε = 1.571, H = 2.554, I = 0.235, D = 0.1745.

Numerical Solution of The Momentum and The Kinetic Energy Integral Equation

The momentum integral equation (6) and K.E. integral equation (7) have been solved with the aid of the compatibility condition (8) by applying Runga-Kutta method.

The Runga-Kutta method for two ordinary first order simultaneous differential equation is

$$k_1 = f(\bar{x}_0, t_0^*, H_{\varepsilon_0})\Delta\bar{x}$$
$$k_2 = f(\bar{x}_0 + \frac{\Delta\bar{x}}{2}, t_0^* + \frac{k_1}{2}, H_{\varepsilon_0} + \frac{I_1}{2})\Delta\bar{x}$$
$$k_3 = f(\bar{x}_0 + \frac{\Delta\bar{x}}{2}, t_0^* + \frac{k_2}{2}, H_{\varepsilon_0} + \frac{I_2}{2})\Delta\bar{x}$$
$$k_4 = f(\bar{x}_0 + \Delta\bar{x}, t_0^* + k_3, H_{\varepsilon_0} + I_3)\Delta\bar{x}$$
$$\Delta t^* = \frac{1}{6}(k_1 + 2k_2 + 2k_3 + k_4)$$

for f and g are computed and calculation proceeds step upto the point of separation.

Source Flow (Solution Wih The Aid of Schlichting's Profile) Along A Solid Wall

For Schlichting profile the compatibility condition

$$(K+1)\left(\frac{\theta}{\delta}\right)^2\left[1+\left(1-\frac{\Pi}{6}\right)K\right]\frac{\theta}{\delta}\lambda - \wedge = 0$$

becomes

$$(K+1)\left(\frac{\theta}{\delta}\right)^2 + \bar{V}_s t^{*\frac{1}{2}}\frac{\theta}{\delta}\left[1+\left(1-\frac{\Pi}{6}\right)K\right] + \frac{t^*}{\bar{x}^2} = 0 \qquad (9)$$

At the starting point the boundary layer parameters are

$\bar{x} = 1, \quad \bar{U} = 1, \quad t^* = 0, \quad \lambda = 0, \quad \wedge = 0$

Hence by equation (9), K = -1, the corresponding to K = -1 the values of the boundary layer parameters are

$\frac{\theta}{\delta}$ = 0.4098, I = 0.2145, H = 2.6600, H_ε = 1.5532, D = 0.1685.

The point of separation for solved wall $(\bar{V}_s = 0)$ by this method is $\bar{X}_s = 1.2060$ which is very close to the known result of Pohlhausen's.

Results

Calculation have been made for three different constant value of $\bar{V}_s = 0, -0.2, -0.3$ when solved with the aid of Pohlhausen profile P_4. For $\bar{V}_s = 0$, the equations reduce to the equations for the solid wall problem. The point of separation for is found to be at which is in close agreement with the value obtain by Pohlhausen.

Discussion of The Result

Calculation have been made for

(i) $\bar{V}_s = 0, -0.2, -0.3$, when solved with the aid of Pohlhausen's profile P_4, and

(ii) $\bar{V}_s = 0, -0.5$, when solved with the aid of Schlichting's profile.

COMPARISON TABLE

Method	Suction Parameter $\bar{V}_s$	Point of separation $\bar{X}_s$
1. Pohlhausen	0.0	1.2130
2. Present method with the aid of Pohlhausen's profile	0.0	1.1612
	-0.2	1.1947
	-0.3	1.2115
3. Present method with the aid of Schlichting's profile	0.0	1.2060
	-0.5	1.3260

From above we observed that with increasing rate of suction parameter $\bar{V}_s$ the point of separation moves further down stream.

REFERENCES

BHATNAGAR, P. L.; SHANKAR, R. & JAIN, A. C. (1960); Boundary layer of a flate plate with suction, Indian Acad. Sci. A, 51, p. 1-13.

CHOUDHARY, R. C. (1966); Steady laminar boundary layer of a viscous in compressible in a convergent channel with distributed suction at the wall, Proc. Ind. Acad. Sci. LXIII, p. 91-104.

MISHRA, B. N. & CHOUDHARY, R. C. (1972); Axi-symmetric stagnation flow with uniform suction, Ind. Journal, Pure and appl. Math., Vol. 3, No. 3.

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ANALYSIS OF 3D VISION & ELECTRONIC DEVELOPMENT

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Declaration

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Abstract

This Paper describes photonic mixer devices (PMD) which are based on time of flight principle . This system has lost the third dimension as important information for object recognition as depicted in figure. 1. Time of flight system consists of an optical transmitter and on optical receiver. The basis working principle of PMD based range imagining camera. The advantage of PMD devices is that we can observe this illuminated .scene with an intelligent pixel array.

Index Term : Photonic Mixer Device (PMD), Complimentary Metal Oxide Semiconductor (CMOS), Cloed Circuit Device (CCD), Time Of Flight (TOF).

1 Introduction

Photonic Mixer Devices, the so-called PMD sensors, are based on time-of-flight principle. This new camera technology realizes three dimensional imaging without complex electronics and without scanning with a solid state imager similar to a CMOS device. This imager detects both the intensity and the distance in each PMD pixel respectively. Today image processing systems are used in a wide field of application and base on CCD or CMOS cameras which detect intensity of the optical image in each pixel or the projection of real scenery ,respectively. Therefore this system has lost the third dimension as important information for object recognition as depicted in figure 1.Other principles to provide technical systems with a three dimensional depth map of the scene need high computer power to find correlation in the grey value map like stereo cameras or they have mechanical components like scanning systems. Both systems are cost-intensive, have a low real time capability

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and have no homogenous depth map in the case of stereo cameras. Time of Flight systems consists of an optical transmitter and an optical receiver and they have already been described in detail in many technical publications. Therefore only the basic principles will be discussed here. Figure 2 show the basic Time-Of-Flight principle. In its most simple form, a light pulse is transmitted by a sender unit and the target distance is measured by determining the turn-around time the pulse needs to travel from the sender to the target and back to the receiver. With knowledge of the speed of light the distance can then easily be calculated. However, the receiver needs to measure with pico-second-accuracy the delay between start and stop, if millimeter-precision is required (6,6ps for 1mm). To realize such system solutions with discrete components, as is done in today's TOF rangefinders, each component in the signal chain must have a very high system bandwidth.

In contrast to figure 2, figure 3 shows the basic working principle of a PMD based range imaging camera. Rather than using a single laser beam (which would have to be scanned over the scene to obtain 3D) the entire scene is illuminated with modulated light. The advantage of PMD devices is that we can observe this illuminated scene with an intelligent pixel array, where each pixel can individually measure the turnaround time of the modulated light.

Typically this is done by using continuous modulation and measuring the phase delay in each pixel.

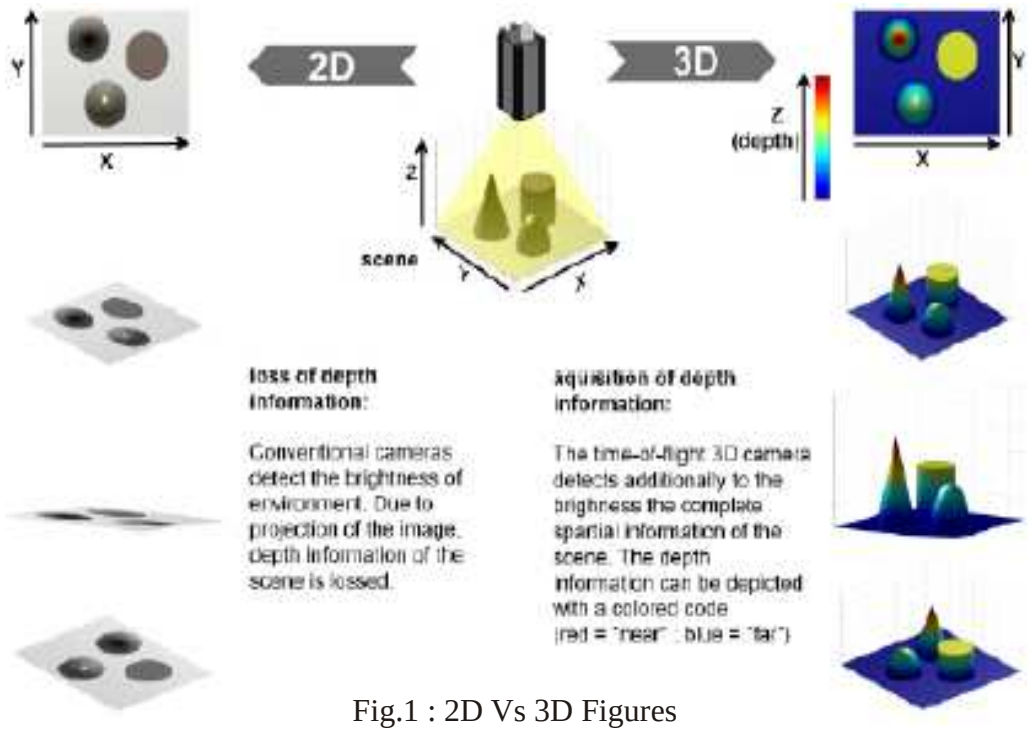

Fig.1 : 2D Vs 3D Figures

In addition to this robust method of obtaining 3D without scanning, the realization of the phase measurement in a quasi-optical domain offers huge advantages compared to the above mentioned discrete solutions. This is one reason, why PMD systems do not require an optical reference channel for most applications. Figure 2: Time-of-Flight measurement principle with pulsed light.

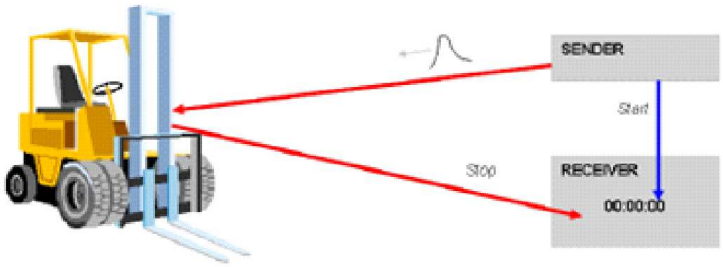

Figure 2: Time-of-Flight measurement principle with pulsed light

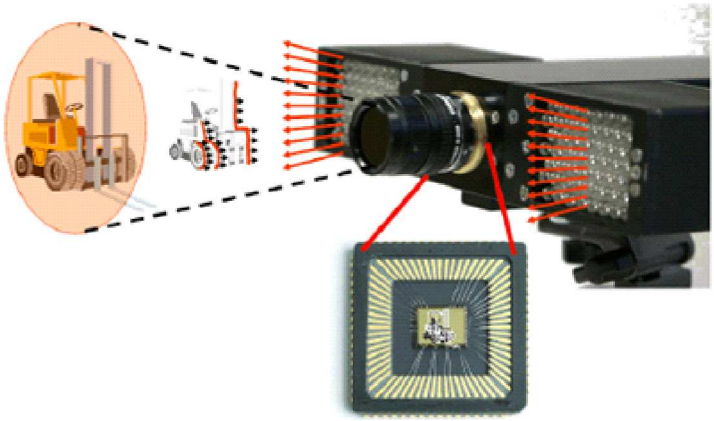

Figure 3: 3D imaging principle based on PMD time-of-flight camera

2. Components of a PMD System

A PMD camera consists of the PMD chip and its peripheral electronics, an illumination source, the receiver optics, a system for controlling the camera including digital interfaces and software. Each component of this camera system more or less affects the key parameters as measurement range, field of view, frame rate and accuracy. Each application or market has different requirements concerning these parameters and additional conditions like sunlight stability, rejection of other IR emitter systems, size and weight.

Because of the wide field of possible application, it is useful for technical evaluation to offer a flexible modular camera system design, depicted in Such a system could be adapted to the requirements of an application in a feasibility study project phase. After checking technical issues, a customer can use some of the depicted camera parts in series development and built up his own system with special market requirements for housing, interfaces, special norms etc. In the following, the parts of a TOF System are described in detail. The PMD Chip is the key component of the system although it is not the only part which affects performance. The number of pixels defines the lateral resolution of the camera well known from digital 2D cameras. Additionally each pixel provides the system with depth information of the corresponding point in the object plane. Depth accuracy is defined by the amount of active light which arrives at this pixel and is affected by optics and illumination but also by fill factor, spectral sensitivity, modulation contrast and last but not least by the active area of the pixel.

3 Operation principle of PMD

This section describes the principle of a simplified PMD sensor realized in CMOS technology. As the complete mixing process of the electric and optical signal takes place within each pixel we call the PMD elements "smart

pixels. It is a five-terminal device with an optical input window, i.e. two transparent modulation electrodes in the middle of the illustration. These light sensitive photo gates are isolated from the substrate by a thin oxide layer. The gates are conductive and transparent for the received light. On the left and the right there are readout diodes which are connected to the pixel readout circuitry. In a PMD pixel the movement of generated charge carriers can be controlled by the reference signal applied to the modulation gates.

4 Analysis of the ACF (autocorrelation function)

To calculate the distance between target and camera, the autocorrelation function of electrical and optical signal is analyzed by a phase-shift algorithm. Using four samples A1, A2, A3 andA4 - each shifted by 90 degrees - the phase, which is proportional to the distance, can be calculated using the following equation.

At a modulation frequency of f_{mod}=20MHz, for example, the wavelength λ mod is 15 meters. The maximum distance for the target is d max = λ mod/2 because the active illumination has to cover the distance twice: from the sender to the target and back to the sensor chip.

5. Applications

Several products have been or will be developed by adapting modular components to the needs of costumer. One very successful example is the effect or PMD, a 1D laser distance sensor (figure 7). A wide field of applications could be solved with this new sensor. To mentioned one example: More than 1 billion passengers pass the airports worldwide. Transportation of luggage is a huge logistic challenge and up to now, pieces of luggage are adjusted by airport employees to pass the security check parallel. One costumer of ifm electronic has developed a transportation unit which adjusts luggage automatically. Eight distance sensors factor PMD are used for recognition of the position. Distorted luggage is turned as long as all sensors measure the same distance to the object. In this case, the luggage is adjusted and could pass the x-ray security gate.

6. Conclusion

Time-Of-Flight systems based on the PMD-principle give the possibility of fast 3D measurement with customizable resolutions depending on the application. With a modular system customer get the possibility to implement a specific solution for his market. Some successful examples in industrial and automotive markets illustrate the flexible design of PMD technology. The knowledge of three-dimensional data is essential for many control and navigation applications. Especially in the industrial and automotive environment a fast and reliable acquisition of 3D data has become a main requirement for future

developments. Moreover low cost 3D imaging has the potential to open a wide field of additional applications and solutions in markets like consumer electronics, multimedia, digital photography, robotics and medical technologies. The key component is an array or line sensor which can measure the distance to the target pixel wise in parallel without scanning. Therefore these cameras have the advantages of fast imaging and high lateral resolution combined with the depth information of the captured scene. The sensors consist of smart pixels, called the Photonic Mixer Device (PMD) which enables fast optical sensing and demodulation of incoherent light signals in one component. Each PMD-camera consists of a sensor chip in standard CMOS technology, a modulated optical transmitter, control and processing electronics and software package. Dependent on special demands of the different application and markets mentioned above each PMD camera component has to be adapted to these demands. The paper gives some examples for costumer specific solutions and the possibilities of a flexible modular camera design.

7. Reference

B. Buxbaum (2002), *"Optische Laufzeitentfernungsmessung und CDMA auf Basis der PMDTechnologiemitte-lsphasenvariabler PN-Modulation",* Dissertation, University of Siegen, Germany.

R. Schwarte et al. (1995), *"A new active 3D-Vision system based on rf modulation interferometry of incoherent light",* Photonics East-Intelligent Systems and Advanced Manufacturing, Proceedings of the SPIE, Vol. 2588, Philadelphia.

R. Lange et al. (1999), *"Time-of-flight range imaging with a custom solid-state image sensor",* Proceedings of the SPIE, Vol. 3823, pp. 180-191,Munich.

R. Lange (2000), *"3D Time-of-flight distance measurement with custom solid-state image sensors in CMOS/CCD technology",* Ph.D. dissertation, University of Siegen, Germany.

T. Spirig et al. (1997), *"The multitap lock-in CCD with offset subtraction",* IEEE Transactions on electron devices, Vol. 44, No. 10, pp. 1643-1647.

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