

## Proceedings of the Anatomical Society of Eastern Nigeria November 2001.

The maiden conference of the Anatomical Society of Eastern Nigeria (ASEN) was held between 27<sup>th</sup> – 29<sup>th</sup> November 2001 at the National Orthopedic Hospital, Enugu. The following are the guest lecture authors' abstracts of communications and demonstration:

### The Importance Of The Thumb In The Human Hand

By Prof. F.C Akpuaka, Dept. of Anatomy, College of Medicine Health Science, Abia State University, Uturu.

• *A guest lecture delivered on the occasion of the maiden Scientific Conference and annual general meeting of the Anatomical society of Eastern Nigeria on 28<sup>th</sup> Nov 2001. This association will help rekindle interest in anatomy especially in these parts.*

I am greatly delighted to be invited to deliver a special lecture to this august gathering. I am grateful to God to be part of this historical occasion of the launching of the Anatomical Society of Eastern Nigeria. It is our hope that this association will help rekindle interest in anatomy especially in these parts.

My personal romance with anatomy started about two and half decades ago in the mid-seventies during my post-graduate years in Manchester, United Kingdom when I was appointed a demonstrator in Anatomy to Manchester Medical School. As my training and experience advanced in plastic surgery, I realised that plastic surgery requires a very precise knowledge of anatomy, for example, in 1988 when confronted with a very extensive injury of the posterior aspect of the elbow, I had to go back to the vascular anastomosis around the elbow. I utilised the radial recurrent artery to develop a distally – based fascio-cutaneous flap which easily covered the defect. The flap survived and subsequently was reproduced in other patients, this one-stage technique was subsequently reported in the British Journal of Accident Surgery in 1991. In January 1998, the technique was given the status of a chapter in the celebrated Grabb's Encyclopedia of flaps – a 3 volume series of 501 chapters of techniques in plastic surgery recognised worldwide. Out of 450 contributors, black Africa was represented through me, by the grace of God.

What contributions have surgeons made to the development of anatomy?

Henry Gray FRCS, published the first edition of Gray's Anatomy in 1958; the current editor of the 15<sup>th</sup> edition, Pickering Pick FRCS, is a Surgeon at St. George's Medical School, London. D.J. Cunningham FRCS of Cunningham's dissection manual published the first edition in 1893. The current editor of the manual is G.J. Romanes FRCS Ed. B. Grant FRCS was the first editor of Grant's method of Anatomy and Grant's Atlas of Anatomy. R.J. Last FRCS published the first edition of Regional and Applied Anatomy in 1954. The 9<sup>th</sup>

edition was revised by R.M.H. McMinn FRCS (1990) and the 10<sup>th</sup> by Chummy Sinnatambu FRCS (1998).

The surgeons, you'll agree have made great contributions to the development of human anatomy. Here in Nigeria, our own Professor Fidelis Udeh, a surgeon, was the foundation Head of Anatomy at the University of Nigeria Medical School; and my humble self, also a surgeon, the foundation Head of Anatomy at both Nnamdi Azikiwe University and Abia State University respectively.

The surgeons, like the thumb of the human hand, must continue to give strength and leadership to the study of human anatomy. The thumb has always been recognised as a particularly important part of the human hand. References abound in the old testament to support this. As part of the consecration rite of the Jews, the thumb of Aaron and his sons were sprinkled with the blood of a ram.

In Exodus chapter 29, verses 19 and 20 – "and thou shall take the other ram, and Aaron and his sons' shall put their hands upon the head of the ram. Then shalt thou kill the ram, and take of his blood and put it upon the tip of the right ear of his sons and upon the right thumb of their right hand .....", Leviticus chapter 8 verses 23 and 24 gives a similar account.

Biblically, the ceremonial for cleansing lepers included the application of the blood of the lamb from the trespass offering and here again it was to their thumbs 3.

The thumb attracted mutilating punishments in early times as shown in Judges 4 chapter one, verses 6 and 7 in which both the thumbs and the great toes of Adoni-bezek were removed by the men of Judah and Simeon even as he had cut off the thumbs and toes of seventy kings who had gathered their food from under his table.

In Roman times, Julius Caesar punished his prisoners of war by amputating their thumbs. Again, in medieval times, the thumb was selectively picked out for a brutal form of torture by the use of a especial device known as the thumb screw to extort confessions from prisoners.



In countless sayings in everyday life, the importance of the thumb is emphasized as in the "rule of the thumb", "under one is thumb", "thumbs up" or "thumbs down", "biting the thumb that fed one".

The use of the thumb in keyboard and other instruments was just popularized by J.S. Bach and later his son C.P.E. Bach. Beethoven later insisted that his pupils learn the use of their thumbs in keyboard playing.

In the insurance industry loss of the thumb represents 40% disability.

It is only in the human hand that the thumb is so highly developed.

Sir Charles Bell,<sup>9</sup> in his classic treatise, "the hand", portrays a sketch showing the bones of the hand of an adult chimpanzee. It shows a remarkably small thumb which only extends to the level of metacarpal heads, the flexor pollicis longus tendon is not represented as a separate entity in monkeys and apes and their thumb lies in the same plane as the other digits thus lacking the ability to oppose.

In the human hand, the thumb is the most important digit because of its mobility and power together with its ability to oppose to any other digit or to the palm. The name given to the thumb by the Romans and means, literally "that which is strong"

#### Thumb Reconstruction

Loss of the thumb represents 40% disability to the hand as a whole such a degree of disability particularly in the dominant hand, justifies some form of reconstruction. It is also a good reason for making every effort to replant an amputated thumb at the time of injury where facilities exist.

Reid<sup>5</sup> classified thumb loss as follows:

**Group 1:** Amputation distal to the metacarpophalangeal joint leaving an adequate stump.

**Group 2:** Amputation distal to or through the metacarpophalangeal joint leaving a stump of inadequate length.

**Group 3:** Amputation through the metacarpal with preservation of some functioning thenar muscles.

**Group 4:** amputation at or near the carpometacarpal joint with loss of all thenar muscles.

#### Aims of thumb Reconstruction

Tanzar and Littler<sup>6</sup> stated the requirements of a reconstructed thumb as follows:

1. it should have sufficient forceful flexion and extension to permit grasping.
2. It must be possible to oppose the tip of the reconstructed thumb to at least one finger (preferably 2).
3. The tip of the thumb should have some tactile sensation otherwise much of its usefulness is lost.

4. A less important but desirable requirement is a reasonable appearance.

#### Methods of Reconstruction of the Thumb

1. local lengthening procedures e.g. (a) Gillies' method<sup>7</sup>, using a bone graft and local flap.
- (b) Master<sup>8</sup> method of ostectomy and distraction lengthening.
2. Pollicisation<sup>9,10,11</sup>.
3. Tubed pedicle, bone graft and neurovascular island flap<sup>12</sup>.
4. Microvascular methods using free toe transfer<sup>13</sup>, bone graft and wrap-round free flap from big toe<sup>14</sup> and free finger transfer from elsewhere<sup>15</sup>.

All these efforts to restore a thumb show that the thumb is a very important digit.

#### Conclusion

To conclude, although the thumb contributes 40% to the function of the human hand, what of the remaining 60%? All fingers are important. As we come together today as human anatomists, veterinary anatomists, zoologists, molecular biologists etc, let us unite to make a strong anatomical fist for the continued growth and advancement of the art and science of Anatomy especially in Eastern Nigeria which is appearing today grow longer and longer, may God bless you all.

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## Abstract Of Communications And Demonstrations

### **Aortic Arch Diameter In Frontal Chest Radiographs Of A Nigerian Population.** Obikili EN, Okoye IJ, Umerah BC, Ude AC & Mgbor S. Dept. of Radiation Medicine, UNTH, Enugu.

Normal standards for aortic dimensions that are available in our environment are often based on Caucasians because of paucity of data on Africans. The possibility of racial differences exist (Ashcroft and Miall 1969, Umerah 1982). The present study was aimed at establishing age, sex, weight and height specific nomograms for aortic diameters in our environment. The subjects were those referred to the Department of Radiation medicine, UNTH and Hansa Clinics Enugu, for chest radiographs. Their ages ranged from 5 to 93. The aortic arch diameter increased progressively with age in both sexes and was higher in males than in females. In males, the mean values for the 20 - 39, 40 - 59 and the 60-years and above age groups were 5, 33, 5.5 and 6.3cm respectively. The corresponding values for females were 4.9, 5.3 and 5.9cm. In females, it was also significantly correlated with parity, weight and body mass index. Predicted formulae and nomograms were also obtained. It was a good index of hypertension in those below the age of 60 but not in the age 60-years diastolic blood pressure.

### **Gaba Agonist - Muscimol Depresses The Ventilatory Output And $CO_2$ Response In Decerebrate Piglets.**

Curran A And Nwobodo Ed. Nnamdi Azikiwe University Medical School, Nnewi Nigeria and Dartmouth Medical School, Lebanon NH, USA.

Sudden infant death syndrome (SIDS), is a subject of victim reportedly due to certain developmental abnormalities such as hypoplasia of the arcuate nucleus while some have reduced receptor muscarinic and kainite binding in their arcuate nucleus in the piglet. The retroventral medulla (RVM) is an accepted homologous of the arcuate nucleus in the piglet. The arcuate nucleus has a direct connection with the raphe system, which controls breathing. This study aims at assessing the effect of a GABA agonist (Muscimol) on ventilatory output and systemic  $CO_2$  in anaesthetized decerebrate piglet. Muscimol produced significant reduction of the integrated phrenic nerve activity (PNA) and the minute phrenic activity (MA). The RVM contains neurons that are important for the control of breathing. A dysfunction in this area could depress hypercapnic response. The result suggests that the RVM dysfunction may be involved in the pathogenesis of SIDS.

### **L - Ascorbic Acid Deficiency Inhibits Bone Development In Heterobranchus longifilis (Val).** Anibeze C.I.P And Inyang N.M Department of Anatomy Abia State University Uturu and Dept. of Zoology University of Nigeria Nsukka.

Although some fish species can synthesize their tissue requirement of L - ascorbic acid (AA) Anibeze and Inyang 2000 reported that the giant African catfish *Heterobranchus longifilis* cannot synthesize AA in sufficient quantity for normal tissue growth and function because they lack the enzyme L - ascorbic acid oxidase for the synthesis of AA from glucose. Lack of AA in the diet of many species has been known to affect normal growth of the tissues. This study investigates the effect of sub optimal doses of AA on normal bone tissue development of *Heterobranchus longifilis*. The observation indicates that low level of AA results in lateral spine deficiencies with slight vertebral deformations. Lardosis or complete broken vertebral column was observed with extremely low levels of AA in the diet of the catfish. A case of AA requirement in the diet of *H. longifilis* was established.

### **Post-Natal Changes In The Morphology Of Sertoli Cells In The Scrotal And Abdominal Testes Of Unilaterally Cryptorchid Goats.** Ezeasor Dn Department Of Veterinary Anatomy, University Of Nigeria, Nsukka .

Sertoli of scrotal and intra-abdominal testes from 25 unilaterally cryptorchid West African dwarf goats between the ages of 1 - 30 months were examined by light and electron microscopy.

In the scrotal testes, the major developmental changes included differentiation of sertoli-to sertoli cell junctional specialization's, alteration of cell-shape due to proliferation of the spermatogenic cells, development of nucleolar vesicles, convolution of nuclear profiles and profusion of SER. In the intra-abdominal testes, the first alterations was noted in the sertoli cells of 3 - 4 month old goats, which contained dense masses showing ultrastructurally to be clumped SER with narrow cistanae. In the 6-8-month-old animals, further changes included astrophy of golgi complex, dilation of cistanae of RER, accumulation of lipoid droplets and lipofuscin granules. Many of these organelles and inclusions were no longer obvious in the sertoli cells of 12-15 month old goats; rather intercellular vacuoles and dilated intercellular spaces had become common. In the 24-30 month old goats, the sertoli cells contained mostly microfilaments and basally located mitochondria with circular cristae in dense matrices.

The alterations in the architecture of sertoli cells in the intra-abdominal testes imply sertoli cell dysfunction. This, in turn, would contribute largely to the failure of spermatogenesis that characterizes cryptorchidism.

### **Effect Of Topical Application Of Zinc Oxide On Early Phase Of Wound Healing.** Asomugha A, Asomugha RN, Ukoha UU, Udemezie OO, Anazodo CC, Anyabolu AA And Chukwujekwu IE. Dept. of Anatomy & Industrial Chemistry, Nnamdi Azikiwe University Nnewi.

30 Albino rats (Wister strain) weighing between 160-240gms were used for the study. The animals were grouped into three with one group serving as control and other groups using 3% and 5% zinc oxide solutions respectively.

Paramedian incisions measuring about 2cm were bilaterally made under ether anaesthesia and subsequently sutured with plain catgut. Smear biopsies were taken from the wound edges at different time points and analyzed for connective tissue cell count. Result showed a zinc oxide dose dependent fast response to injury with higher cell count indicating a rapid inflammatory response, indicative of an effective wound healing process that may ultimately lead to a reduced total healing time and probably better quality scar tissue.

### **Morphological Alterations Of Visceral Organs Of Wistar Rats Following Subacute Exposure To Dichlorvos** Achukwu P & Ezeasor DN. Dept. Of Med. Lab. Sciences And Vet. Anatomy, University Of Nigeria, Nsukka.



The widespread and indiscriminate use of Dichlorvos (locally known as *Otapia-pia*) as household pesticide would in time lead to its buildup as an environmental pollutant. Consequently, the present study examines its effects on the morphology of the visceral organs of Wistar rats following subacute exposure.

57 male and female albino Wistar rats aged 2-4 months were used for the study. The LD<sub>50</sub> of the Pesticide was determined to be 36.3mg/kg-body weight. Therefore, 1/400<sup>th</sup> and lesser concentrations of the pesticide were administered through food to the experimental animals for 35 days. On Day 35, after close observation and weighing, the animals were euthanized and the lung, kidney, intestine, stomach and liver dissected out, examined grossly, fixed and processed for light microscopy. The study revealed significant weight losses ( $P < 0.50$ ) in rats fed with doses of Dichlorvos. Grossly the organs appeared normal. Microscopically, *Otapia-pia* at 0.3 and 0.4mg/kg doses caused Centrilobular necrosis and vacuolation of hepatocytes. Accumulation of neutrophils, macrophages and lymphocytes were also evident in the portal area of the liver at all levels of exposure. Hyalinization of some part of the glomerulus was caused by 0.35 and 0.4mg/kg. Upon treatment, the lung showed area of intestinal thickening while keratinization of squamous cells was observed at Oesophageal region.

The work shows that in spite of the well-known generalized acute anti-cholinesterase activity, subacute exposure produces mild histopathological changes in the visceral organ.

### **Relationship Between Prostatic Diameters And Age Among South East Nigerians**

Anyanwu Gg, Anibeze Cip, Mgbor So And Akpuaka Fc Dept. Of Anatomy, Abia State University, Uturu.

Prostatic diameters, size and volumes were determined by the use of trans-abdominal ultrasonography among males in Southeast Nigeria. The values obtained were then compared with the age of the subjects. A total of one hundred and thirteen (113) subjects aged 15 – 80 years were used. A mean average diameter of 3cm x 4cm x 3cm was established. These diameters show a positive correlation with age.

### **Prevalence Of Leuko-Neutropenia In A Nigeria Population.** Nwobodo Ed, Ndukuba PI & Amilo G Dept. Of Physiology, Nnamdi Azikiwe University At Nnewi And Abia State University At Uturu, Nigeria.

It is established that 20 – 50% of persons of African origin have leucopenia which is often associated with neutropenia. These leucopenic individuals manifest no evidence of Increased susceptibility to infections. The call for separate leucocyte reference value for Africans has been gaining wider attention. We studied the leucocyte data of over 200 Nigerian adults and children of the Southeast with a view to defining the prevalence of leucopenia and other peculiarities of their leucocyte profile. The purpose of this study was to provide a set of normal leucocyte values for clinicians.

We found a mean leucocyte count of  $6.9 \times 10^9/l$ , leucopenia prevalence of just about five for the adult population and a peculiar relative lymphocytosis among both the adult and children population. We conclude that Nigerians are not commonly leucopenic as is widely reported for many ethnic groupings in Africa.

### **Relationship Between Size Of Abdominal Aorta And Age In South East Nigerians.** Udemezie OO, Anibeze CIP Mgbor SO & Akpuaka FC. Dept. Of Anatomy Abia State University, Uturu

A total of one hundred and twenty six (126) 'apparently' healthy Nigerians of both sexes from Southeast Nigeria were randomly selected and had abdominal aortic diameters determined by ultrasonography.

Abdominal aortic sizes were measured at the celiac axis, renal artery and bifurcation. The results show that aortic diameters of females were generally smaller and more so significant ( $p < 0.01$ ) at bifurcation. The study establishes a positive correlation between the diameters and age of subjects.

### **Acute Toxic Effects Two Grades Of Diesel Fuel Oil Rat Lungs.** Dida BC, Asomugha AL, Asomugha RN, Chinaka CH. Dept. Of Anatomy University Of Port-Harcourt & Nnamdi Azikiwe University Nnewi.

A total of 70 Albino Wistar rats of both sexes with an average of 200gm were used for the study. Single varying doses of two grades of diesel fuel oil were injected intra-peritoneally to determine [a] the LD<sub>50</sub> and [b] the toxic pulmonary effects.

Results showed the LD<sub>50</sub> for pure diesel oil to be 37.18m/kg and that for adulterated diesel oil to be 36.98m/kg. There was a dose dependent effect on the breathing with breathlessness increasing in severity with increasing dose. Histopathologic examination of the lungs show dependent thickening of the alveolar septa due to edema, inflammatory cell infiltrates. In those subjected to very high doses of diesel oil, there is evidence of pulmonary hemorrhage and disruption of alveola septa walls.

### **Microbial Effect Of Garcinia Kola Extracts.** Ezepe UF, Ucheya RE, Esom EA And Nwosu EO. Dept. Of Anatomy University Of Nigeria, Nsuka.

Garcinia, Kola known as bitter kola is the seed of a plant widely cultivated in West Africa. It has several cultural uses including its use in herbal medicine preparations. It is claimed to have antidote and anti-infective properties. It has been used for the local control of mouth odour. The effect of Garcinia Kola on isolated bacteria of the oral flora was studied. Organisms isolated from the mucosa of two volunteers were found to be generally resistant to Garcinia Kola preparations. Similarly, pathological organisms isolated from an infected wound were also resistant to Garcinia Kola preparations. It is concluded that the much-vaunted antibacterial effect of Garcinia Kola on mouth odour and other instances may not be as a result of any anti-infective property.

### **Relationship Between Kidney Parameters And Body Habitus Among Southeast Nigerians.** Ukoha U, Anibeze CIP Akpuaka FC And Mgbor SO Dept. of Anatomy, Abia State University, Uturu.

One hundred and twenty (120) healthy Nigerians of Southeast origin aged between 15 – 70years and weighing between 51 – 100kg were randomly selected into the study. Kidney parameters viz. Length, breadth, thickness, and volume were measured by abdominal ultrasound, and values obtained compared with body habitus, i.e. height, weight, and



body surface area (BSA). Only the height of the subject shows a strong correlation with kidney length. Pearson's 2-tailed correlation show 0.001 for height and the length of the left kidney and 0.000 for the right kidney. The other kidney parameters correlate rather weakly with the body habitus.

**Embalming.** Ezugworie OJ. Dept. Of Anatomy Abia State University Uturu.

In Nigeria, embalming is not taught in most medical schools, therefore, knowledge of embalming among health professionals appear scanty. This paper discusses embalming beginning with the definition, history of embalming and the embalming methods from the ancient times, the middle ages up to the renaissance period. The Egyptian method as described by the 5<sup>th</sup> century BC Greek historian Herodotus is discussed. Also highlighted are few instances of embalming by the ancient people of Nigeria. The history and principles underling modern embalming are included in this paper. Finally, the reasons for embalming are enumerated.

**Growth Rate Of Pupils In Primary Schools In Ebonyi State.** Akpa AOC And Albert Etudo. Dept. Of Anatomy College Of Health Sciences Ebonyi State University, Abakaliki.

The growth rates of primary school children in urban and rural schools in Abakaliki were surveyed. Data were collected on height, weight, sex and age of the pupils. Means of collected data were grouped and compared according to rural and urban categories. Result indicating means, standard deviation from the means, standard error, T & P values were also obtained with the significance levels.

General and sex specific growth trends were established in growth curves.

**Relationship Between Body Habitus And Abdominal Aortic Size Among Southeast Nigerians.** Udemezue OO, Anibeze CIP, Mgbor SO And Akpuaka FC. Dept. Of Anatomy, Abia State University, Uturu,

Abdominal aortic diameters were determined at the level of coeliac axis, renal artery and bifurcation with the use of abdominal ultrasound. A total of one hundred and twenty-six (126) healthy Nigerians of both sexes were randomly selected for this study. The diameter figures for females are generally smaller, while the weight of the subjects show a significant positive correlation up to the 86 – 95kg weight range, we however note no correlation between subject height and aortic diameters.

**Relationship Between Prostatic Diameters And Weight Among Southeast Nigerians.** Anyanwu G, Anibeze CIP, Akpuaka FC And Mgbor SO. Dept. Of Anatomy Abia State University Uturu.

A total of one hundred and thirteen (113) apparently healthy Nigerians weighing between 41kg and 120kg were randomly selected and used for this study. The prostatic sizes were measured by means of trans-abdominal ultrasonography and values determined compared with weights of subjects. The mean average diameters determined were 3cm x 4cm x 3cm was established. It was determined that beyond the 71-80kg-weight range, a negative correlation exists between determined prostatic sizes and subjects weight.

**Hiv-The Roundtable Virus.** Ekpo BO And Okechi OO. College of Medicine and Health Science, Abia State University, Uturu, Nigeria.

The paper concentrates on the cell Biology of the immunological crisis following the HIV infection, and on key aspects of the complex Molecular biology of propagation of the virus in the organism, which explain why AIDS has no medical solution for now and in the foreseeable future. The enormity of the great human tragedy is discussed in molecular terms all in effort to reiterate the importance of prevention programmes, education and counseling as the only effective method curbing the spread of the disease.

**Clinico – Anatomical Study Of Cases Of Cerebero Vascular Accident In Enugu State.** Akpa AOC. Dept. Of Anatomy College Of Health Sciences Ebsu Abakaliki

The etiologies, clinical manifestations and prognosis of 23 cases of cerebrovascular accident were analysed, between August 1996 and August 2001. The patients were grouped into five categories between 40 and 70 years with ten year intervals. Clinical examinations, follow-up management and treatment revealed higher random incidence of CVA amongst the males. Prognosis was better in the youthful cases; while pre-CVA habits was found to include alcoholism, obesity, stress, hyperphgia in the patient. About 33% of the cases occurred between the year 2000 and 2001, indicating rise in the frequency. The blood pressure reading was expectedly milder in the younger patients and more in the elderly ones. Generally, prognosis was better in the youths.