SCREENING FOR CERVICAL CANCER

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INTRODUCTION 1

- ***Cervical cancer :***

  - 12% of all cancers in women

  – ***second most common cancer in women worldwide***

  – ***the commonest cancer in developing countries***

  – ***about half a million new cases each year***

  – ***more than ¼ million deaths each year***

  – ***Yet cervical cancer is both preventable and curable***

INTRODUCTION 2

- *In third world countries:*
  - *more than 80% of cervical cancers are in developing countries:*

  screening, when it is available , is limited to a few urban areas
  - *screening is of sub optimal quality*
  - *The incidence will rise, especially in Africa, as a result of the AIDS pandemic*
  - *most cancers (>80%) including those of the cervix, are seen at a late stage (stages 3 and 4)*
  - *facilities for treatment do not exist in most areas*
  - *Palliative treatment is also not available*

INTRODUCTION 3

- ***Reasons for late diagnosis:***
  - ***lack of knowledge by the population about the symptoms***
  - ***a fatalistic attitude towards cancer and unawareness about the possibility of cure***
  - ***lack of knowledge by the medical and paramedical staff***
  - ***lack of or disorganized screening programs***
  - ***lack of health care facilities***

INTRODUCTION 4

- ***In Cameroon for instance :***
  - ***only 10 pathologists and 3 cytotechnicians for a population of some 16 million inhabitants (the female population contributes to 51%)***
  - ***facilities for treatment exist only in the two big metropolis, Yaounde and Douala***

INTRODUCTION 5

- *Cervical cancer and HPV:*
  - *over 90% of cases of cancer of the cervix are caused by an infection with one or more types of HPV which is sexually transmitted.*
  - *the virus enters the cells of the cervix and slowly causes cellular changes that can result in cancer*
  - *women generally infected in their teens or early twenties, but invasive cancer may not develop for as long as 10 to 20 years*
  - *Immuno-depression may greatly shorten this interval.*
  - *Many of the otherwise healthy women would shed or eliminate the virus before age 30*

INTRODUCTION 6

- *Cytology screening :*
  - *is the mainstay of early detection of cervical cancer*
  - *adequate screening services are not available in developing countries and will not be available for many decades.*
  - *only about 25% of women above 35 years of age could be properly screened even if the number of cytologists were to increase 10 fold.*
  - *Since cytology based screening programs for cervical cancer cannot be provided on a large scale in developing countries (lack of trained staff ,program logistics and quality assurance) alternative approaches are needed*

INTRODUCTION 7

- *A good screening method should have the following characteristics:*
  - *The disease should be one that is frequent with an impact on public health (high morbidity and mortality)*
  - *The sensitivity of the screening procedure should be high (>60%).*
  - *The specificity should also be high*
  - *The test procedure should be acceptable to the population and financially affordable*
  - *Treatment facilities for the disease should be available and should have a positive impact on morbidity and mortality.*

INTRODUCTION 8

- *To be effective, any screening program has to involve at least 70-80% of the population and be well organized to include a good recall system.*

INTRODUCTION 9

- ***PUBLIC HEALTH MODEL (After Miller AB)***
  - ***Community based***
  - ***Good population coverage: screening, diagnosis, treatment***
  - ***Quality control systems for screening, reading, colposcopy***
  - ***Data collection for feedback and improving of services***
  - ***Epidemiological pattern well defined***

PROGRAMMATIC ISSUES OF CERVICAL CANCER SCREENING 1

- ***To be successful, a cervical cancer screening program should:***
  - ***All the steps of the programme should be acceptable to the women. ie from education to screening, to diagnosis, to treatment, to follow-up.***
  - ***Women health and rights advocates should be involved right from the planning stages***
  - ***should respect the local customs, dignity, privacy and autonomy of the women***

PROGRAMMATIC ISSUES OF CERVICAL CANCER SCREENING 2

- *Recommendations from consensus conference of the International Network for the Control of Gynaecological Cancers (INCGC)*
  - *Achieve highest possible coverage rate*
  - *the indicator here should be number of women screened, not number of Pap smears done*
  - *Start off with a comprehensive demonstration programme in a well delimited zone before going national*
  - *But aim at setting up organised national programme as soon as possible.*

PROGRAMMATIC ISSUES OF CERVICAL CANCER SCREENING 3

- *To establish a cervical cancer screening programme, the following requisites should be guaranteed :*
  - *Establish the target group (age range)*
  - *Persuade women in the target group to attend for screening e.g. : by public and professional education.*
  - *Establish education programme aimed to reach the target community.*
  - *Ensure that those found abnormal return for diagnosis and treatment.*
  - *Persuade those screened and found normal to return for re-screen at the recommended intervals.*

PROGRAMMATIC ISSUES OF CERVICAL CANCER SCREENING 4

- *Ensure that screening facilities are optimal.*
- *Ensure that facilities required for diagnosis and treatment of abnormalities are adequate.*
- *Ensure that follow-up of those treated for abnormalities is complete.*
- *Create a system for dealing with advanced disease.*
- *Define clearly the referral mechanisms for patients.*
- *Institute a system to ensure quality control in the laboratories.*
- *Create an information system that allows for evaluation of the programme (internal and external)*

PROGRAMMATIC ISSUES OF CERVICAL CANCER SCREENING 5

Proposals 1 :

- *Community based education is best done by people who have experience in this area.*
- *Develop and test appropriate and effective methods.*
- *Aim at both men and women since the man could be the obstacle to female participation in the programme.*
- *Train staff at all levels before starting the programme.*
  - *Taking Pap smears : nurses midwifes, laboratory technicians, doctors*
  - *Reading Pap smears : cytotechnicians under supervision of cytopathologist*
  - *Treatment : doctors, nurses.*

PROGRAMMATIC ISSUES OF CERVICAL CANCER SCREENING 6

Proposals 2:

- *Screening services : the establishment of screening services as part of integrated services may prove to be cost effective (MCH services)*
- *Who to screen :*
  - *Look at peak age incidence in the area and start screening 5 years before.*
  - *In most countries this would be at 30 to 35 years then screen until age 60 to 65 years.*
  - *Women who have had no smear until age 60 or 65, can have one and then exit the programme too.*
- *Frequency : VIA every 2-3 years.*
- *Pap smear every 5 to 10 years.*

PROGRAMMATIC ISSUES OF CERVICAL CANCER SCREENING 7

Proposals 3:

- *Communication : the laboratory should ensure feed back on quality of smears to smear- takers.*
- *Primary prevention is also important. The programme should encourage activities which support :*
  - *Later age at first intercourse.*
  - *Men have fewer sexual partners.*
  - *Women should be empowered to have sex only when they want and how they want including the use of condom.*
  - *Cervical cancer interventions should benefit from initiatives in other areas notably STI and HIV/AIDS prevention programmes.*

METHODS OF SCREENING FOR CERVICAL CANCER

- Cervical cytology
  - The standard and most successful activity to date in reducing incidence and mortality from cervical cancer is the Pap smear
- Other methods
  - In all these other methods, there is lack of data on the extent of incidence or mortality reduction associated with their use.
  - Secondly, there is lack of formal cost effective analysis.

CERVICAL INSPECTION 1

Clinical down staging

- involves looking at the cervix in a symptomatic woman with a speculum to detect early stage cancer.
- abnormal findings need to be further investigated.
- Data from cross sectional studies in India indicate that the test results in 40 – 70 % referral of pathological cases.
- The method is not intended for the detection of disease at the pre-invasive stage.
- The method could only be recommended in very low resource settings. But it is in this same setting that there is not enough facilities for the management of invasive cancer.
- Therefore, the method cannot be recommended as a primary method of screening.

CERVICAL INSPECTION 2

Unaided Visual Inspection of the Acetic Acid treated cervix (VIA):

- *Visual inspection of cervix treated with 3-5 % acetic acid aims to detect CIN. Good lighting is imperative.*
- *Has been used for over 15 years in many studies in developing countries. Many have compared VIA to screening cytology.*
- *Sensitivity of VIA is 60-90% with an average of 70% depending on training offered to service providers. Cytology is 40-85%.*
- *VIA may be particularly useful in developing countries where cytology is unreliable, follow-up rates low and resources limited.*
- *VIA + another method e.g. Cytology or HPV/DNA may be an attractive process even in well to do settings; that is a two stage screening process.*

CERVICAL INSPECTION 3

- ***Aided visual Inspection of the Acetic Acid treated cervix***
  - ***This approach involves the use of a gynoscope, a small, light weight, low-powered (2-4x) monocular telescope to view the acetic acid treated cervix. How much better it is than unaided eye is still to be determined.***

CERVICAL INSPECTION 4

Speculoscopy

- In this method, an additional florescent light source preferably in a dark room aids in the detection of aceto white lesions.
- Information regarding its efficacy as a screening tool is limited.
- The chemi-luminescent light source is attached to the upper blade of the vaginal speculum but sensitivity and specificity appear to be comparable to that of VIA.
- In view of the additional resources needed, it is unlikely that this method be used as a primary screening test in developing countries.

CERVICOGRAPHY

- *This screening method involves examination of magnified photographic documentation of the acetic – acid – impregnated cervix.*
- *Sensitivity to detect high grade lesions is lower than that of cytology and even VIA.*
- *The specificity is however, comparable to that of cytology.*
- *Because of the equipment involved, it is unlikely to be used as a primary screening test in developing countries*.

CERVICAL SMEARS 1

- Cytological screening using the Papanicolaou smear is the established method of screening.
- A reduction in both the incidence of and mortality from cervical cancer has been demonstrated in many countries (eg : British Columbia, Canada, Finland, UK).
- These have been countries with well organised national programmes based on cytological screening.
- In most developing countries, limited financial, logistic and manpower resources have inhibited the establishment of national screening services. The problems associated with this method are :
  - high costs

- requirement of skilled technical staff
- labour intensive reading and reporting of smears
- inadequate follow up of abnormal smears
- high false negative rates eg : 30% in Norway, 10 % UK.

To improve on the results of Pap smears the following improvements have taken place.

- Use of cyto-brushes
- Liquid-based cytology
- Automation

Combination with other methods eg : HPV/DNA

LIQUID BASED CYTOLOGY

- ***specimen quality improved***
- ***preparations are easier to read***
- ***higher sensitivity than conventional smears***
- ***specificity at least similar to that of cytology***
- ***suited for simultaneous testing for HPV, GC, chlamydia***
- ***cost effective***

HPV/DNA TESTING

- Several approaches to HPV/DNA testing are available and include :
  - Hybrid capture – sensitivity very high for oncogenic types of HPV
  - PCR
  - In site hybridisation tests
- Trials
  - As an alternative to cervical cytology
  - 2 step screening programme
  - Management of women with abnormal Pap smear

JUSTIFICATION OF HPV TESTING IN CERVICAL CANCER SCREENING 1

- *HPV infection are quite common .*
- *Most of these infections with high HPV type end in a benign manner because most women would eliminate them before age 30 years*
- *A persistent high risk HPV and its progression to invasive cancer.*
- *Therefore, only a few cases infected with high risk HPV will become cervical cancer.*
- *In view of the above, begin screening at 30 years or at 25 years in high risk groups, or 8 years after the first sexual intercourse*

JUSTIFICATION OF HPV TESTING IN CERVICAL CANCER SCREENING 2

- *Cytology results suffer from a degree of inherent subjectivity and not even liquid based cytology can completely eliminate this.*
- *HPV testing is objective and highly reproducible.*
- *High risk HPV is detected in almost all (99.8%) cases of cervical cancer, hence the rationale for using it in cervical cancer screening programmes*

ROLE OF HPV IN CERVICAL SCREENING 1

- If HPV testing is combined with cytological screening, the screening interval can be safely increased. But the HPV test should not be used before 30 years.
- Combining Pap smear + HPV screen allows us to space screening intervals to 8-10 years since HPV has a negative predictive value of 100 %
- This combination will also allow us to refer fewer women for colposcopy.

ROLE OF HPV IN CERVICAL SCREENING 2

- Those to be referred for colposcopy will include the following categories of women :
  - High grade SIL
  - Persistently positive HPV (after 12 months) even if cytology is normal.
  - Persistent ASCUS/AGCUS or low grade SIL no matter the HPV status.
  - HPV testing
- High negative predictive value (99-100%)
- High sensitivity (95-100%) for HG SIL lesions.

COLPOSCOPY 1

- *Definition :*
  - *Examination of cervix and related parts e.g.: vagin using a suitable magnifying apparatus with good illumination. The colposcopy views also alterations in the underling stroma. The term was first used by the inventor of the method, Hinselman, in 1925.*
- *Indications :*
  - *Women with HG-SIL*
  - *Women with LG-SIL on more than 2 six monthly assessment.*
  - *Clinically suspicious cervix (or PCB, IMB).*
  - *Multi centric disease (VIN, VAIN, CIN)*
- *Basic requirement*
  - *Good apparatus and instrumentation*
  - *Pathology: essential the communication between cytologist and colposcopist,*

– *Training of colposcopist must be of the highest standards*

- *Suitable setting*
- *Counselling of patients referred for colposcopy important.*
- *Simple leaflet and/ or video essential information.*
- *Quality standard in colposcopy and cervical pathology. In UK National colposcopy Quality Assurance Group oversees quality standards.*
- *Computerisation of clinic data, slides and digital photography.*

POLAR PROBE

- Real time electronic device for detection of cervical neoplasia
- Applied directly to cervix with instant recognition of normal and abnormal tissue.
- May be used in primary screening or as an adjunct to cytology.
- Sensitivity similar to that of cytology.
- Specificity better than cytology in some settings.
- Further trials in progress

CONCLUSION 1

- *Cervical screening programmes have made major contribution in reducing mortality from cervical cancer.*
- *The basic screening test used in these programmes had been the Pap smear.*
- *There has been, however, worries as to the false negative rates of Pap smear.*
- *Efforts have been undertaken during the past few years to reduce these false negative rates.*
- *These include :*

CONCLUSION 2

- *These include:*
  - *repeat smears in a year or use of colposcope in clinically suspicious cases. No need repeating smears immediately, (e.g. less than three months) since it still finds false rates.*
  - *liquid based preparations in 2/3 of cases.*
  - *Telemedicine – counting education*
  - *Quality control in cytology and colposcopy*
  - *Direct consultation for primary or secondary opinion*
  - *Use of HPV/DNA testing*
  - *Molecular diagnosis may reveal details of pathogenesis*
- *But these new technologies must be cost effective and not compromise sensitivity or specificity*

SCREENING PROGRAMMES IN EUROPE

The programme in Finland is the model for organised programmes of screening by cervical cytology.

-Programme started in 1960

-Women 30-59 years

-Yearly screening interval.

Screening programmes in Europe

–Characteristics

–- Education of the population

-Fast feed back of screening results to women

-Cost effective system for referral of women with abnormalities

-Histological confirmation of diagnisis

-Continuous quality control

Organized programmes yield far better results in reducing morbidity and mortality than opportunistic screening.

THANKS FOR YOUR ATTENTION!