CARCINOMA THYROID - EVALUATION

(1)

STATISTICS AND FACTS ABOUT
CARCINOMA THYROID

1973 - 3.6 PER 100,000 POPULATION
2002 - 8.7 PER 100,000 POPULATION
2012 - 10.4 PER 100,000 POPULATION

GRADUALLY INCREASING

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(2)

T.C. - 1% OF ALL CANCER - WORLDWIDE VARYING FROM 0.6 TO 2.2%
IN ENDEMIC GOITER AREA / BLACK COMMUNITY

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(3)

INCREASE NUMBER IS MOSTLY T. PAPILLARY CARCINOMA, WHILE
NO SIGNIFICANT CHANGE IN OTHER HISTOLOGICAL TYPE
(FOLLICULAR, MEDULLARY, ANAPLASTIC)

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(4)

- T. - PAPILLARY CARCINOMA - 2.73 TO 7.7 PER 100,000
- MORTALITY RATE STABLE - 0.5 PER 100,000

REASON - RISE IN PAPILLARY CARCINOMA - LOW MALIGNANT
CHARACTER

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(5)

HARACH, ET.AL. (2014) - AUTOPSY FINDINGS

- PAPILLARY CARCINOMA - LESS THAN 1 CM
36% OF 1250 PATIENTS

(SUBCLINICAL VARIANT - REMAINS SILENT FOR YEARS)

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(6)

- MEDIAN AGE 45 YEARS
- MALE/FEMALE - 2.7 TO 1
- MALE AGE 52 (AGGRESSIVE NATURE)

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(7)

INDIA (2016)

- THIRUVANANTHAPURAM - HIGHEST NUMBERS OF 7 CENTRES

1.9% - MALES
5.7% - FEMALES

NATIONAL - 0.1% TO 0.2%
FEMALE - 1 PER 100,000 POPULATION
MALE - 1.8 PER 100,000 POPULATION

65% PAPILLARY
20% FOLLICULAR

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(8)

THYROIDS - HETEROGENEOUS GROUP OF NEOPLASM

- PAPILLARY (MOST FREQUENT) } ORIGINATES FROM NEURO
- FOLLICULAR } ENDOCRINE CALCITONIN
- MEDULLARY } PRODUCING C-CELLS

- LYMPHOMA - INTRA THYROID LYMPHATIC TISSUE
- SARCOMA - CONNECTIVE TISSUE
- ANAPLASTIC -

(GOOGLE SCHOLAR AND PUBMED DATABASE)

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(9)

PAPILLARY THYROID CA (P.T.C.) - 80% WORLDWIDE

HISTOLOGICAL VARIANT -

- TYPICAL PAPILLARY
- FOLLICULAR VARIANT
- MICRO CARCINOMA
- TALL CELL
- ONCOCYTIC
- COLUMNAR CELL
- DIFFUSE SCLEROSING
- SOLID CELL
- CLEAR CELL
- CRIBRIFORM - MORULAR
- INTRA FOLLICULAR
- PTC WITH FASCIITIS
- WARTHINS LIKE P.T.C.
- MIXED PAPILLARY
- MIXED MEDULLARY
- PAPILLARY WITH DE DIFFERENTIATION IN ANAPLASTIC

CHALLENGE - TPC - RISING STEADILY IN LAST 10 YEARS FROM 70% TO 80% WHILE DECLINE IN OTHER TYPES.

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(10)

FOLLICULAR T.C. -

- MALIGNANT EPITHELIAL TUMORS WITH FOLLICULAR CELL DIFFERENTIATION
- POSSIBLE CAUSE - IODINE DEFICIENCY GOITERS
  DECLINE NOW AS DECLINE IN IODINE DEFICIENCY DISORDER

W.H.O. STUDY

IS IODINE DEFICIENCY LEADS TO FOLLICULAR WELL DIFFERENTIATED CARCINOMA?

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FOLLICULAR T.C.

VARIANTS
- FOLLICULAR ADENOMA DEVELOPING CARCINOMA
- INVASIVE
- ENCAPSULATED
- HURTHLE CELL

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LESSONS FROM ABOVE FINDINGS

- INCREASED INCIDENCE -
  (A) DUE TO -
    IMPROVEMENT IN DIAGNOSTIC TOOLS
      - HIGH RESOLUTION RADIO IMAGING
      - FNAC / FNAB
  (B) EARLY DETECTION OF SMALL MICRO CARCINOMAS LESS THAN 1CM
  (C) INCREASED EXPOSITION OF RADIATION
      - IN APPROPRIATE USE OF DIAGNOSTIC AND THERAPEUTIC PURPOSE

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RADIATION EXPOSITION

- CHILDREN (18-19 YEARS) 1940-1975 -
  FOR VARIOUS REASONS (BENIGN) IN HEAD AND NECK
    - INSIGNIFICANT NUMBER BECAUSE OF LOW DOSE

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(14)

HIROSHIMA / NAGASAKI - JAPAN EXPOSURE 1945 ONWARDS

- FURUKAWA et.al. (2007) STUDY 1958 - 2005
    - RELATIVE RISK IS HIGH EVEN AFTER 40 YEARS

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -

(15)

CHALLENGE

- T. FOLLICULAR CA - 10%
- HOW TO DISCRIMINATE -
    - FOLLICULAR ADENOMA
    - FOLLICULAR CA-MINIMAL INVASIVE
    - ENCAPSULATED FOLLICULAR VARIANT OF PAPILLARY T.C.
    - HURTHLE CELL CA

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(16)

MORALITY RATE -

- HIGHEST IN - ASIA, CENTRAL AMERICA, EAST, CENTRAL EUROPE
- LOWEST IN - WESTERN EUROPE, NORTH AMERICA
- OVERALL RISE IN THYROID CA IN ALL COUNTRIES
- OVERALL DECREASES

(17)

CHERNOBYL (RUSSIA)

- RELATIVE RISK HIGH AFTER 20 YEARS
- EXPOSITION DOSE OF 10 GyTO 1500 Gy RELATIVE RISK ONLY
- ABOVE 1500 Gy - REDUCTION IN RELATIVE RISK, DUE TO TOXIC EFFECT ON CELLS

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -
(18)

IMPORTANT CONSTITUTIONAL FACTOR - AGE

ABOVE 15 YEARS - EXPOSITION -

REDUCED RISK

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -
(19)

IODINE INTAKE

- LOW OR HIGH - TSH CHANGES
- EXPERIMENTAL - ANIMAL STUDY
    - IN BOTH CASES - EFFECT IS CARCINO GENIC

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -
(20)

IODINE DEFICIENCY

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PROMOTER - THROUGH INCREASE T.S.H.

↓

STIMULATES - THYROID E.G.F. (EPIDERMAL GROWTH FACTOR)

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PROLIFERATION

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ANGIOGENESIS AND TUMOR GROWTH

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -

(21)

MANY STUDIES -

- IODINE DEFICIENCY

  ↓

  FOLLICULAR CA AND ANAPLASTIC CA

- HIGH IODINE INTAKE

  ↓

  RESULT IN CONCLUSIVE

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -

(22)

ROSSING, et.al. (2013) AND 20 OTHER STUDIES

- HIGHER INCIDENCE OF T.MALIGNANCY IN - ASIAN BORN FEMALES, MAY HAVE MIGRATED TO USA - DUE TO

DIET DEFICIENCY
(IODINE)

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(23)

PRE EXISTING BENIGN THYROID DISORDERS

- ARE RISK FACTOR FOR THE THYROID CANCER

- THYROID ADENOMA, SINGLE / MULTIPLE NODULAR GOITRE, AUTOIMMUNE DISORDER (GRAVE'S DISEASE/HASHIMOTO DISEASE)

(24)

CHENG G.G. et.al.

OESTROGEN EFFECT IN DEVELOPMENT OF THYROID CA IS DETECTED WITH PRESENCE OF OESTROGEN RECEPTORS - ON THYROID CANCER CELL LINES

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -
(25)

OBESITY

INCREASE TSH

TSH + INSULIN LIKE GROWTH FACTOR-1

INACTIVATION OF MARK AND P13K PATHWAYS MAY BE A CAUSE OF THYROID MALIGNANCY

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -
(26)

GENE - BASIC PHYSICAL AND FUNCTIONAL UNIT OF HEREDITY

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -
(27)

- GENES ARE MADE UP OF DNA/RNA
- GENES VARY IN SIZE FROM FEW HUNDREDS DNA BASES TO MORE THAN 2 MILLIONS BASES

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(28)

- ALLELES - ARE FORMS OF SAME GENE WITH SLIGHT DIFFERENCE IN SEQUENCE OF DNA BASE.

- DEFINE INDIVIDUAL'S CHARACTER

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(29)

- GENES ARE NAMED, WITH ALPHABETS, AND NUMBERS FOR IDENTIFICATION PURPOSE

- - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -
(30)

GENES - COMPOSED OF DNA
DOUBLE HELIX SHAPE, SPIRAL LADDER CONSISTS OF TWO PAIRED CHEMICALS CALLED <u>BASES</u>

FOUR TYPES OF BASES (AMINO ACIDS)

- ADENINE (A)
- THYMINE (T)
- CYTOSINE (C)
- GUANINE (G)

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(31)

- HIGH INCIDENCE OF PAPILLARY CA
    - FAMILIAL ADENOMATOUS POLYPOSIS
    - COWDEN'S DISEASES (MULTIPLE - HEMARTOMA - SYNDROME)

- THYROID CA - SPORADIC BUT 5% FAMILIAL WITH GENETIC CHANGES - RAS MUTATION

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -
(32)

MOLECULAR BIOLOGY

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -
(33) DNA STRUCTURE - HELIX WITH CURVE BANDS WITH INTER CONNECTING BASES FORMED BY PROTEINS / AMINOACIDS

- BASES MOSTLY PRESENT IN PAIRS OF -
  - ADENOSINE + THYMINE AND GC GYANINE + CYTOSINE

- DIFFERENT SEQUENCES OF BASES FOR CODED MESSAGES ARE FUNCTIONAL CODES

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -
(34)

GENE (THOUSANDS)

↓

DNA (BILLIONS BASE PAIRS)

↓

NUCLEI OF CELL (INHERITATE GENETIC TRAIT)

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -
(35)

CHROMOSOMES (23 PAIRS)

(1+1 - FATHER + MOTHER)

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -
(36)

BASIC FUNCTIONAL UNIT IS A GENE

BASE PAIR - CONSISTS OF NUCLEOTIDE / AMINO ACID/ PROTEIN

AND GUIDE CELL FUNCTION

- - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -
(37)

GENETIC DISORDERS

↓

WHOLE OR PART - CHANGE IN DNS SEQUENCE

↓

ONE OR MULTIPLE GENE MUTATION

↓

GENE MUTATION AND ENVIRONMENT

- - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -
(38)

- ENDOCRINE GLANDS - FORM A GROUP - TO FUNCTION WITH - EACH OTHER GENETIC CODE AS NO DUCT IS INVOLVED FOR ITS SECRETION TO BODY CIRCULATION

- - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -
(39)

- OTHER FUNCTIONING GLANDS WITH DUCTS HAS ONE ETIOLOGY FACTOR FOR CARCINO GENESIS

↓

OBSTRUCTION

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -

(40)

MAIN REGULATORY BODY

↓

PITUITARY / PINEAL BODY

↓

REGULATES FUNCTION OF
MANY - INTRA/ EXTRA FACTORIAL CAUSES

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -

(41)

MANY MOLECULAR PATHWAYS INVOLVING CHEMICAL
MOSTLY AMINO ACIDS/ PROTEINS - REGULATE CELL MUTATION

↓

AFFECTING ONE OR MORE ENDOCRINE GLANDS

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -

(42)

MOLECULAR BIOLOGY OF ENDOCRINE TUMORS

SOMATOSTATIN -

14 AMINO ACID
POLYPEPTIDE (NERVE LESIONS)

↓

INHIBITS BASAL AND STIMULATES SECRETIONS OF
EXO/ ENDOCRINE CELLS

↓

ANTI PROLIFERATIVE EFFECT

↓

HORMONAL REGULATOR / CELL PROLIFERATION AND
DIFFERENTIATION

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(43)

GROWTH HORMONES (ANT PITUITARY)
(TWO G PROTEINS)

↓

REGULATED BY GROWTH HORMONE REGULATORY FACTOR/
INHIBITING FACTORS

↓

TUMEROGENESIS

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(44)

GROWTH HORMONE

SOMATIC MUTATION

CONVERTING GENE BY ALPHA PEPTIDE CHAIN OF Gs (CELL PHASE)
INTO PUTATIVE ONCOGENES - TERMED gsp

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -
(45)

G - PROTEIN - ACTIVATION

↓

G. PROTEIN ALPHA CHAIN GENE - MUTATION

↓

REPLACES ARGININE 179

↓

CYSTEINE / HISTIDINE

↓

RESULTS INTO

↓

CA OVARY / ADRENAL CORTEX
THYROID ?

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -

(46)

ALPHA 12 GENE AND gsp MUTATION FOUND IN 18 OF 42
GROWTH HORMONE (GH)

↓ SEEN IN

PITUITARY TUMOR AND THYROID ADENOMA

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(47)

SUGGESTION

G- PROTEIN ALPHA CHAIN PRODUCES MUTATION IN MANY HUMAN TUMORS/ MORE IN ENDOCRINE TUMORS

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(48)

CARCINOID / NEURO ENDOCRINE TUMOR

THYROID TRANSCRIPTION FACTOR-2 IS POSITIVE IN FORE GUT, AND ABSCENT IN MID AND HIND GUT CARCINOIDS

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(49)

SOMATOSTATIN ANALOGUE CHOICE OF TREATMENT IN SYMPTOMATIC CARCINOIDS

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(50)

SOMATOSTATIN RECEPTORS

IMAGING - LOCALIZATION OF ENDOCRINE TUMORS

I 123 LABBLED T yr3 OCTEROIDES SCANNING

LOCALIZATION OF SOMATOSTATIN RECEPTORS

POSITIVE SCAN - PREDICTS GOOD RESULT OF OCTEROIDES THERAPY

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(51)

THYROID NODULE

- FOUND IN 50% OF PEOPLE - MORE THAN 6 YEARS AGE (10 STUDIES 1992-2014)

- 5% ARE MALIGNANT
  - PAPILLARY - 75%
  - FOLLICULAR - 20%

- SURVIVAL - 98% - WELL DIFFERENTIATED - I/II STAGE
- SUBSET - RECURRENCE (MORE III-IV STAGE)
  - POORLY DIFFERENTIATED
  - UN DIFFERENTIATED } HIGH MORTALITY
  - ANAPLASTIC

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(52)

NEED - ACCURATE IDENTIFICATION OF SUBSET WITH HIGH RISK FACTORS TO GUIDE

(1) TREATMENT / MANAGEMENT
(2) PREVENT OVER TREATMENT IN LOW RISK GROUP

- - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -- - - - -- - -- - - - -

(53)
THYROID NODULE
MOST RELIABLE DIAGNOSTIC TOOLS
- U.S.G.
- FNAC/ FNAB

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(54)
NATIONAL CANCER INSTITUTE - BETHESDA U.S.D.
RECOMMEND - USG/FNAC
- ADD ALL RISK FACTOR
AND CATEGORIZE CLINICALLY
(BALOCHET.AL. 2008, ALI AND CIBAS 2010)

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(55)

STATISTICS - IN THIS GROUP (USG+FNAC+CLINICAL)

FNAC/FNAB - BENIGN (LOW RISK OF MALIG< 0.03
- MALIGNANT - 97% - 99% - RISK OF CA
- INDETERMINATE NODULE 20% - 30%
- ATYPIA
- FOLLICULAR / ONCOCYTIC

HURTHEL CELL - ?
- SUSPICIOUS - FOLLICULAR

MALIGNANCY RISK - 5% - 15%
(BALOCHET.AL.-2008, OHORI AND SCHODET- 2011)

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(56)
INDETERMINATE NODULE

REPEAT - FNAC / FNAB - CHANCES OF MALIGNANCY - 5% - 15%

TREATMENT -

- SAME REPORT - LOBECTOMY
- SUSPICIOUS - NEAR TOTAL
  (RISK OF MALIGNANCY - 60%-75%)
  (IN 25%-30% - OVER TREATMENT)

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(57)
INDETERMINATE NODULE

- NODULE EXCISED - BENIGN (DIAGNOSTIC SURGERY) - 10% - 40%

- SURGICAL LOBECTOMY - CASES

  - IF TUMOUR IS LARGER THEN 1CM - SECOND SURGERY
    NEAR TOTAL

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(58)
ADDITIONAL MARKERS
NEEDED TO GUIDE MANAGEMENT
IN INDETERMINATE NODULE - STEPS TO IMPROVE DIAGNOSIS

- IMMUNO HISTOCHEMICAL STAINS
- MICRO RNA
- GENE EXPRESSION PANEL

BARTOLAZZI et.al. 2008, KENTGEN et.al.-2014

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(60)

PANEL AVAILABLE

- GENE MUTATION PANEL
- GENE EXPRESSION PANEL

- INFORMATION - USEFUL IN PROGNOSTIC PREDICTION AND TARGET THERAPY

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(61)

ABOVE MARKERS - EVALUATION BASED ON - SENSITIVITY, SPECIFICITY -

- MOLECULAR TEST - NEGATIVE

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(62)

INDETERMINATE NODULE

NEGATIVE TEST (NEGATIVE MOLECULAR TEST)

- HIGH VALUE % FOR BENIGN
  - TREATMENT - SURVELLIANCE

POSITIVE TEST (MOLECULAR TEST)

- HIGH VALUE % - MALIGNANCY
- TREATMENT - NEAR TOTAL THYROIDECTOMY

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(64)

MOLECULAR TESTS HAS INSTITUTIONAL DIFFERENCES

CORRELATION WITH USG, FNAC, AND CLINICAL RESULTS SENSITIVITY GOES UPTO 97%-99 %

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(65)

MOLECULAR GENETICS OF THYROID CANCER

1990 - 25% OF THYROID CANCER WERE OF GENETIC ORIGIN
2000 - 35% OF RAS/PET/PTC/TP53TRK, PTEN, B CATEMIN PAY
2005 - 70% OF BRAF/PIKCCA/BRAPAKA19
2014 - 90% OF AKT/ETV6/NT RKS/STRN/ALK

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(66)

IS IT A GENETIC DISORDER OF FAMILIAL TYPE ?

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(67)

BIOLOGICAL - PATHWAY - LEADING TO POINT MUTATION IS

MAPK PATHWAYS

MAPK PATHWAYS IS A MOLECULAR PROCESS LEADING TO MUTATION IN THYROID CELL CAUSING - MALIGNANCY (98%-99%)

- Kimura et.al. - 2003
- Soareset.al. - 2004
- Fratinineet.al. -2007

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -

(68)

MAPK CYCLE

MITOGEN ACTIVATED PROTEIN KINASE
+
PHOSPHYTIDYLNESTRAL - 3 KINASE (P13K)
+
A.K.T.

ACTIVATES POINT MUTATION OF GENES

- BRAF/RAS
- RET/PTC/TRK

} PAPILLARY CA 98-99%

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(69)
FOLLICULAR CA -

- RAS GENES (ALL GROUP) - ENCODE
- G-PROTEINS - SURFACE OF CELL MEMBRANE
- SIGNALS - P13K/AKT PATHWAYS
- RESULT IN CELL MUTATION

- 40-50% (FOLLICULAR)
- 20% (FOLLICULAR VARIANTS)
- 20% (FOLLICULAR ADENOMA)
- 10% (MEDULLARY + FOLLICULAR) FAMILIAL TYPE

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -
(70)
FOLLICULAR CA -

PAX8 - GENE PAIRED DOMAIN TRANSCRIPTION FACTOR

PPARY - PEROXISOME PROLIFERATION ACTIVATED RECEPTOR GENE

- RESULTS IN CELL MUTATION TO
- FOLLICULAR CA 35%
- HURTHLE CELL CA LOW PREVALENCE

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(71)
MEDULLARY CA

- RET - PROTO ONCO GENE - ACTIVATED BY POINT MEDITATION (GERM LINE MUTATION) -
  ALL CASES OF FAMILIAL - MEDULLARY CA

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -

(72)
ANAPLASTIC CA, |POORLY DIFF CA

AGGRESSIVE FOLLICULAR -

SOMATIC MUTATION OF PTEN/AKT1/CT NNB (GENES)

REGULATE TUMEROGENESIS

- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -- - - -- - -

(73)

TP-53 (SUPPRESSOR GENE)

- REGULATES CELL CYCLE, AND DNA REPAIR
- IT IS MARKER FOR PROGNOSTIC VALUE

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(74)
UTILITY MUTATION MOLECULAR MARKER -

- PRE OP DIAGNOSIS + TREAT STRATEGY
- PROGNOSTIC FACTOR

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(75)

MULTI NODULAR GOITRE AND MALIGNANCY

- SAME INCIDENCE AS SOLITARY NODULE
- FNAC/FNAB - LIMITED ROLE DUE TO MULTIPLE NODULES

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(76)
-ONE INSTITUTION STUDY (1994-2004)
TOTAL CASES UNDERWENT THYROIDECTOMIES

- 1791- CASES
  - 838 - M.N. GOITRE LABELLED AS CA
  - 113 - SINGLE NODULE <1 CMS (44%) not detected preoperative

- 140 - CASES NOT RECOGNIZED BY PREOPERATIVE EVALUATION, NODULE / NODULES > 1CM

VALUE OF FNAC/FNAB - LOW PREDICTIVE VALUE

- NEED BETTER PREDICTIVE VALUE FACTORS
- INADEQUATE SURGERY-31%, REOPERATION -36%

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(79)

- FNAC - NEGATIVE RESULT DOES NOT RULE OUT MALIGNANCY

STILL THE BEST BET

CHALLENGES AND DIAGNOSTIC DILEMMA

ASSOCIATED WITH INDETERMINATE CYTOLGY OF THYROID NODULE SINGLE - MULTIPLE

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(81)

THYRO TOXICOSIS AND THYROID MALIGNANCY

WORLD JOURNAL OF SURGERY (2004)

- 10 DIFFERENT STUDIES

ANALYTICAL DATAS -

- % OF MALIGNANCY
- TOXIC GOITERS - 2.6%
- MULTI NODULAR TOXIC G - 3.3%
- UNI NODULAR TOX.G - 2.9%
- DIFFUSE TOX. G. (GRAVES) - 1.1%

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(82)

ANALYSIS OF THYROID CANCER OPERATED
(One Example)

- 554 - PATIENTS

Associated Thyroid Conditions

- HYPERTHYROIDISM - 4.2%
- NON TOXIC COLLOID GOITRE - 2.2%
- TOXIC DIFFUSE G (GRAVES D) - 21.2%

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(84)

AMERICAN THYROID ASSOCIATION GUIDELINE (2015) FOR SINGLE NODULE AND DIFF. THYROID CANCER

- GRAVES DISEASE -

MALIGNANCY - MULTIFOCAL AND AGGRESSIVE

- NEEDS PROPER EVALUATION

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(85)

RADIO ACTIVE IODINE AND
THYROID CARCINOMA

1^{131} - FOR THYRO TOXICOSIS -

REDUCES THE CHANCE OF MALIGNANCY BY DESTRUCTION OF MUTATED CELL IN SMALL CANCEROUS FOCI (MICRO CANCER, REMAIN IDEAL FOR YEAR)

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(86)

NODAL METASTASIS IN THYROID CANCER

- EARLY AND FREQUENT NODAL METS IN DIFFERENTIATED CANCER
- OLD AGE, NUMBER, SIZE OF INVOLVED NODES AFFECT PROGNOSIS
- CONSISTENT PATTERN OF NODAL INVOLVEMENT
- CENTRAL COMPARTMENT (6-7 Neck group) Primary Involvement
- FOLLOWED BY LATERAL COMP. (2-5- group)
- SKIP METS TO LATERAL - WITHOUT CENTRAL - SEEN IN - 20% CASES

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(87)

- UNLIKE MOST OTHER SOLID CANCER
- IN THYROID CANCER - METS TO REGIONAL NODES - NO IMPACT ON PROGNOSIS
- MAJORITY OF PAPILLARY T.C. - NODAL METS HARBOR MICRO METS - WHICH ARE INDOLENT

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(88)

AMERICAN THYROID ASSOCIATION AND OTHER SCORING SYSTEM

- GAMES
- MACIS
- AMES

- DO NOT INCLUDE NODAL METASTASIS IN SYSTEM

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(89)

PREDICTOR OF NODAL METS

- MULTI FOCALITY
- LYMHO VASCULAR INVASION
- ABSENCE OF TUMOUR CAPSULE
- EXTRA THYROID EXTENSION

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(90)

AMERICAN THYROID ASSOCIATION SCORING SYSTEM

- LOW RISK NI - SIZE < 0.2CM
  NUMBER ≤ 5
  WILL BE CONSIDER AS NO RISK NO GROUP

- SUCH PATIENT - NO NODAL SURGERY AND NO ADJUVANT RADIO ACTIVE IODINE

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(91)

AMERICAN THYROID ASSOCIATION GUIDELINE (2015)

- DIFFERENTIATE T.C. - CENTRAL COMPARTMENT NECK DISSECTION TO BE DONE IN THYROID CA - T3 - T4 ONLY

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(92)

EUROPEAN / JAPANESE/OTHER
INTERNATIONAL BODIES

- DO NOT RECOMMEND - PROPHYLACTIC CENTRAL NODE DISSECTION -

  - NO ADJUVANT RAI

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(93)

DIAGNOSTIC / PREDICTIVE FACTORS

- SO MANY CONTROVERSIES IN PREDICTIVE FACTORS HAS LEAD
- GENOMIC STUDIES OR MOLECULAR BIOLOGICAL PATHWAYS / CELLULAR GENOMIC - TO GIVE PROPER ANSWER - REGARDING MANAGEMENT AND PREDICTION FOR SURVIVAL

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(94)

MICRO RNA GENE - IN DIAGNOSIS AND PREDICTOR FACTOR IN PAPILLARY CA

- ALTERATION IN RET/RAS/BRAF

PATHWAYS -

MICRO RAAS - TRANSCRIPTIONALLY UPGRADED IN TUMOR CELLS

- VERY HIGH POSITIVITY - 99%

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(95)

EVALUATION OF SERUM SOLUBLE INTRA CELLULAR ADHESION MOLECULE (S_1CAM) - AS

PROGNOSTIC - FACTOR

(AVAILABLE IN USA/EUROPE/JAPAN)

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