

EUROPEAN TRAINING PROGRAMME IN PAEDIATRIC HAEMATOLOGY AND ONCOLOGY

EUROPEAN BOARD OF PAEDIATRICS

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March 2013

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2-YEAR TRAINING PROGRAMME IN PAEDIATRIC HAEMATOLOGY/ONCOLOGY

BACKGROUND

This syllabus is a comprehensive document detailing the requirements expected from a trainee in paediatric haematology/oncology.

The training lasts 2 years and includes both haematological malignancies and solid tumours. Non-malignant conditions such as coagulation disorders and hemoglobinopathies are excluded.

The suggested training programme has been designed in a modular fashion. The modules contain core knowledge and practical aspects related to a diagnostic and therapeutic approach which are essential for all trainees in Paediatric Haematology/Oncology. Expertise in practical procedures is also required, specifically concerning lumbar puncture, bone marrow aspiration and bone marrow biopsy. More specific aspects concerning diagnosis, disease-related treatment and follow-up are specified in module 3. In addition, the trainee is also expected to be familiar with research methodologies and ethical issues pertaining to research and clinical management.

Finally, based on final career intentions of the trainees, it may be advisable to spend an additional year for more specific training in haematological malignancies, solid tumours or CNS tumours.

The final goal is to ensure a standard training programme throughout Europe, allowing the specialists in Paediatric Haematology/Oncology to exercise their skills in a specialised tertiary care unit.

MODULE 1

KEY SUBJECTS

- Cancer epidemiology
- Genetic and environmental factors predisposing for malignancies
- Tumour clinical presentation, potential metastatic sites and tumour-staging
- Emergencies at diagnosis and during treatment, including spinal cord compression, intracranial hypertension, tumour lysis syndrome, abdominal occlusion, septic shock, mediastinal acute compressive syndrome, arterial hypertension
- Imaging, including functional FluoroDeoxyGlucose Positron Emission Tomography (FDG-PET) in lymphoma and in other selected tumours; functional MRI in brain tumours; MIBG scintigraphy in neuroblastoma, and other new radiological procedures that may be important for the assessment of response and treatment strategies
- Principles of chemotherapy and new agents: pharmacokinetics, pharmacodynamics, mechanism of drug resistance, side effects and complications related to chemotherapy
- Interactions between chemotherapy and concomitantly administered drugs
- Treatment for haematological malignancies and solid tumours according to current national/international protocols at diagnosis and relapses
- Supportive care, including infection management, pain control and blood products transfusion
- Principles of bone marrow and stem cell transplant
- Role of radiotherapy in different tumours
- Principles of surgery and tissue collection for diagnosis and biological studies
- Prognostic factors and therapeutic implications
- Molecular markers as diagnostic and prognostic tools and treatment implications
- Possible neurological, endocrinological, cognitive, behavioural and social sequelae of different tumours and their treatment
- Ethical issues, consent, data protection

MODULE 2

PRACTICAL ACTIVITIES

DIAGNOSTIC AND THERAPEUTIC APPROACH

- Clinical, laboratory and radiological investigations for appropriate staging of different tumours
- Interpretation of radiological investigations and laboratory findings
- Treatment planning at diagnosis or relapse, according to current national/international protocols
- Recognition and treatment of the main emergencies at diagnosis and during treatment
- Treatment of infectious diseases according to current guidelines
- Accurate pain evaluation and adequate treatment
- Palliative care
- Intrathecal drug administration and safety issues according to good clinical practice
- Management of acute reactions to drugs and extravasation of chemotherapy agents
- Autologous hematopoietic stem cells transfusion procedure and treatment related complications
- Tumour and treatment-related follow up plan
- Communication to parents, children and adolescents
- Interaction and coordination with other professionals involved in the care of children and adolescents with cancer (i.e. nurses, psychologists, physiotherapists, dietitians)
- Specific needs for ethnically and socially diverse families

ADOLESCENTS AND YOUNG ADULTS WITH CANCER

- Tumour behavior, biology and treatment in adolescents and young adults
- Specific psychological needs in adolescents and young adults with cancer
- Consent, aspects and ethical aspects in adolescents and young adults with cancer

MINIMUM NUMBER OF PROCEDURES TO BE PERFORMED

- 15 Lumbar punctures
- 15 Bone marrow aspirations
- 10 Bone marrow biopsies

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MINIMUM NUMBER OF PATIENTS TO BE EVALUATED

- At least 2 out of 3 following patients' groups:
- 15 patients with haematological malignancies
- 10 patients with brain tumours
- 15 patients with other solid tumours



MODULE 3

DIAGNOSIS, TREATMENT AND FOLLOW-UP

LEUKAEMIA

- Constitutional and genetic conditions predisposing to leukaemia
- Management of the treatment-related complications, including tumour lysis, coagulopathy, thrombosis, infections, septic shock
- Treatment according to different types of leukaemia
- Indications for bone marrow transplant
- Current role of radiotherapy and associated complications
- Cytogenetic and molecular aspects affecting prognosis and treatment in infants and children
- Clinical, laboratory and molecular response to treatment for prognosis and treatment plan
- Management of testicular, CNS and bone marrow relapse
- Management of myelodysplastic syndrome and rarer forms of childhood leukaemia (such as chronic myeloid leukaemia and juvenile myelomonocytic leukaemia)

HODGKIN'S LYMPHOMA

- Histological subtypes and influence on prognosis
- Role of FDG-PET at diagnosis and in the assessment of response and treatment intensity
- Potential late effects related to chemotherapy and radiotherapy: increased risk of second cancers mainly in patients receiving radiotherapy, cardiac and lung dysfunction, damage of reproductive function

NON-HODGKIN'S LYMPHOMA

- Histological subtypes in children and adolescents
- Possible diagnosis on pleural effusion or ascitic fluid
- Management of acute presentations at diagnosis, including tumour lysis, mediastinal compressive syndrome, intestinal obstruction, airway compression and spinal cord compression
- Molecular genetic aspects important for diagnosis (i.e. t(8;14), t(8;22) and t(2;8) in Burkitt lymphoma; t(2;5) in anaplastic large-cell lymphoma)

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RENAL TUMOURS

- Differential diagnosis of a renal mass
- Pathology of renal tumours
- Management of tumour-related hypertension
- Congenital anomalies associated with Wilms' tumour and current screening strategy
- Cytogenetic and molecular aspects of Wilms' tumours
- Relationship between histology of Wilms' tumour, treatment and prognosis
- Principles of treatment of bilateral Wilms' tumours
- Nephroblastomatosis and Wilms' tumour
- Treatment of non Wilms' renal tumours

NEUROBLASTOMA

- Updated Neuroblastoma classification
- Stage 4S Neuroblastoma
- Knowledge of paraneoplastic syndrome (opsoclonus-myooclonus-ataxia and secretory diarrhea)
- Management of clinical related problems, i.e. hypertension, spinal cord compression
- Laboratory findings: urinary catecholamines, neurone specific enolase, ferritin and lactate dehydrogenase
- Treatment and prognosis according to age, stage, histology and molecular genetic aspects (such as MYCN amplification)
- Role of MIBG scintigraphy for assessment of response

BONE TUMOURS

- Predisposing factors (i.e. previous radiotherapy) and genetic aspects associated with osteosarcoma and Ewings tumours
- Differential diagnosis of a suspected bone tumour, according to anatomic site and radiological aspects
- MRI/TC of whole limb with primary lesion seeking skip metastases
- Molecular genetic aspects of importance for diagnosis (i.e. t(11;22) in Ewing sarcoma)
- Role of neoadjuvant chemotherapy to facilitate surgery and assess tumour response to treatment

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- Adjuvant chemotherapy, according to histopathological response to treatment
- Surgical approach, including the use of prostheses
- Principles of rehabilitation
- Relevance of histological margins at resection and possible indications for further surgery or adjuvant radiotherapy in Ewing sarcoma

SOFT TISSUE SARCOMA

- Histological subtype of soft tissue sarcoma affecting prognosis and treatment
- Molecular genetic aspects of importance for diagnosis (i.e. t(2;13) in alveolar rhabdomyosarcoma)
- Prognosis and treatment of rhabdomyosarcoma according to stage, histology, tumour volume and anatomic site of the primary lesion
- Prognosis and treatment of non RMS soft tissue sarcoma

CNS TUMOURS

- Different histological types of brain tumours and related treatment (medulloblastoma, low grade glioma, high grade glioma, brainstem glioma, ependymoma, germ cell tumours, craniopharyngioma, atypical teratoid/rhabdoid tumours and other rare brain tumours)
- Accurate staging, including the use of RMI spine and CSF cytology in medulloblastoma, intracranial germ cell tumours and other selected tumours, serum and CSF tumour markers in intracranial germ cell tumours
- Management of low grade glioma in children with NF1
- Cytogenetics and molecular abnormalities affecting prognosis and treatment (i.e. MYC family genes and β -catenin in medulloblastoma)
- Complications and late effects arising from tumour, surgery, radiotherapy, and chemotherapy related to patient's age and stage of development (potential neurological, endocrinological, cognitive sequelae and behavioural changes)
- Syndromes associated with tumour development
- Multidisciplinary team approach to rehabilitation

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HEPATIC TUMOURS

- Differential diagnosis of right upper quadrant masses
- Congenital conditions associated with an increased risk of hepatoblastoma
- Role of serum α -fetoprotein in the diagnosis and management of liver tumours
- PRETEXT staging system in hepatoblastoma
- Treatment of hepatoblastoma and hepatocarcinoma
- Indications for liver transplantation in the management of hepatic tumours

MODULE 4

RESEARCH ASPECTS

- Clinical trial methodology, including rationale and aims, study design, eligibility criteria, toxicity notification, response to treatment
- Ethical aspects
- Data reporting
- New drug development and phase I-II studies
- Principles of statistics



MODULE 5

CONTINUOUS MEDICAL EDUCATION

- Good clinical practice : attendance at specific biannual course organised by certified providers
- Attendance at international courses/meetings/congresses: at least one during the training
- Attendance at national courses/meetings/congresses: at least one a year
- Participation in institution's multidisciplinary tumour boards

MODULE 6

OPTIONAL 3rd YEAR IN A SPECIFIC FIELD: HAEMATOLOGICAL MALIGNANCIES; SOLID TUMOURS; BRAIN TUMOURS

HAEMATOLOGICAL MALIGNANCIES

ALLOGENEIC BONE MARROW TRANSPLANT

- Clinical trial methodology, including rationale and aims, study design, eligibility criteria, toxicity notification, response to treatment
- Ethical aspects
- Data reporting
- New drug development and phase I-II studies
- Principles of statistics

LABORATORY HAEMATOLOGY

- Bone marrow, blood, CSF cytology and morphology
- Flow cytometry
- Immunophenotyping
- Histo/cytochemistry
- Cytogenetics

SOLID AND BRAIN TUMOURS

Additional practical training with focus on multidisciplinary team interaction, molecular based treatment and future protocols



CONTACTS

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