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Purpose or Objective: The AIEOP-MH89 protocol aimed to optimize treatment results in pediatric Hodgkin lymphoma compared to the previous AIEOP-MH83 protocol. Modifications included: involved field instead of extended field radiation therapy (RT) in early-stage patients (pts); anticipated RT for pts with a mass/thorax ratio (M/T)>0.33; enrolment of advanced-stage pts in SIOP HD IV protocol.

Material and Methods: Between 1989-1995, 254 evaluable pts (median age 10 years, range 2-15 years) received the AIEOP-MH89 protocol. The pts were divided into 3 chemotherapeutic groups according to the clinical stage. Group (GR) 1, pts in stages IA and IIA, including those with a mass/thorax ratio (M/T)>0.33, received 3 cycles of adriamycin, bleomycin, vinblastine, and imidazole carbamamide (ABVD). RT was given after completion of chemotherapy. GR 2, pts in stages IEA, IB, IIA with M/T>0.33, IIB, IIEB, IIIA, IIBS, and IEA, was treated with alternating cycles of nitrogen mustard, vincristine, procarbazine, and prednisone (MOPP)/ABVD. The therapeutic program included 2 cycles of MOPP/ABVD before radiation therapy and 4 cycles MOPP/ABVD after RT. GR 3, pts in advanced stages IIIIB, IVA and IVB, was treated according to the SIOP HD IV-87 protocol, with 2 cycles of vincristine, procarbazine, prednisone, adriamycin, (OPPA) and 2 cycles of cyclophosphamide vincristine, procarbazine, prednisone (COPP) followed by RT. Pts enrolled in GR 1 and 2 were treated with involved field RT. Pts with positive cervical lymph nodes received RT to the neck. In positive axillary lymph nodes, RT included also the supraclavicular region. Pts with mediastinal disease were treated with mediastinum and bilateral suprachlavicular fossa RT, whereas pts with involvement of both mediastinum and other supra diaphragmatic lymph nodes stations received the conventional mantle RT. Pts with positive single inguinal lymph node received also comprehensive RT to omolateral iliac nodal stations, whereas in case of multiple subdiaphragmatic lymph nodes disease, bilateral iliac nodal stations irradiation was avoided if not directly involved. The radiation doses were established according to response to initial chemotherapy, and were the same in GR 1 and 2: pts in CR and ≥75% PR received 20 Gy, whereas <75% PR received 40 Gy. GR 3 pts with CR or ≥75% PR received 20 Gy, and 36 Gy those with 75% PR.

Results: In table 1 are reported the results in term of Overall Survival (OS) and Event Free Survival (EFS). Long term side effects of treatment were evaluated (median follow-up duration 16 years): 25.6% of the pts developed thyroid complications and 6.6% secondary malignancies.

| Table 1: Overall and by Group Risk, Survival (OS) and Event Free Survival (EFS) |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|
| Risk Group                  | 5 yrs | 10 yrs | 15 yrs | 20 yrs |
| OS                           |       |       |       |       |
| GR1                          | 99.0% | 98.4% | 97.9% | 97.9% |
| GR2                          | 97.2% | 96.5% | 95.3% | 94.5% |
| GR3                          | 93.7% | 92.2% | 89.2% | 89.2% |
| EFS                          |       |       |       |       |
| GR1                          | 89.3% | 80.5% | 86.5% | 86.5% |
| GR2                          | 94.5% | 92.8% | 89.2% | 89.2% |
| GR3                          | 89.2% | 86.8% | 86.8% | 86.8% |

Conclusion: The AIEOP-MH89 protocol improves globally OS and EFS. In GR 1 OS and EFS are the same compared to the previous protocol, minimizing radiation exposure. In GR 2 and 3 OS and EFS improved because of therapeutic changes. Analysis of delayed toxicities underlines the importance of long-term monitoring of pts.
Purpose or Objective: Childhood cancer survivors (CCS) face high risk for late effects. Aside from malignant neoplasms, it is known that ionizing radiation induces benign tumours of, e.g., the central nervous system and other sites. Record-linkage with pathology report registries provides a unique opportunity to obtain non-selected and uniformly collected benign tumour information. We aim to estimate the incidence of histologically-confirmed solid benign tumours (SBT), to describe clinical characteristics and to quantify the role of radiotherapy (RT).

Material and Methods: The Dutch Childhood Oncology Group – Late effects after childhood cancer (DCOG LATER) is a collaborative effort of all 7 academic paediatric haemato/oncology centres in the Netherlands with clinicians and researchers who focus on optimal patient care and research in CCS. The DCOG LATER cohort includes 6168 five-yr CCS treated between 1963 and 2001 before the age of 18 yrs. The entire DCOG LATER cohort was linked with the nationwide Dutch Pathology Registry (PALGA) to ascertain histologically confirmed SBT (excluding skin) diagnosed between 1990-2014.

Results: We identified 1278 eligible pathology reports in 788 CCS after a median follow up since diagnosis of 22 yrs (max. 52). We excluded reports on SBT diagnosed within 5 yrs after childhood cancer (243 reports); 145 reports without a clear diagnosis in conclusion and 25 reports still to be classified. These preliminary analyses include 865 reports from 578 CCS, of whom 79% had one SBT, and 21% had multiple. Tumour locations included head/neck/CNS (36%), chest (13%), abdomino-pelvic (34%), and extremities (14%). Of 3% location was unclear. Most common SBT types in the head/neck/CNS were meningiomas (44%), often following cranial radiotherapy (RT) (95%); mammary fibroadenomas (49%), 1 in 6 after RT chest; colorectal adenoma (38%), including 1 in 4 after abdominopelvic RT, and female genital tract tumours (leiomyomas and ovarian mucinous cystadenomas) (29%), 1 in 3 after abdominopelvic RT. We will present effects of RT chest; colorectal adenoma (38%), including 1 in 4 after abdominopelvic RT, and female genital tract tumours (leiomyomas and ovarian mucinous cystadenomas) (29%), 1 in 3 after abdominopelvic RT. We will present effects of RT between 1990-2014.

Conclusion: This preliminary analyses give insight into the amount and types of histologically confirmed SBT in CCS in relation to RT. To our knowledge, this is one of the first comprehensive assessments of subsequent SBT among CCS. In ongoing clinical follow-up studies we aim to gain knowledge about risk factors and clinical characteristics (e.g. meningioma) to help guideline groups decide for or against screening of asymptomatic, high-risk CCS.