Tumori pediatrici in età adulta

Salvina Barra

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IST

IRCCS Azienda Ospedaliera Universitaria San Martino - IST
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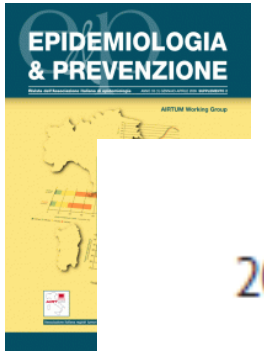
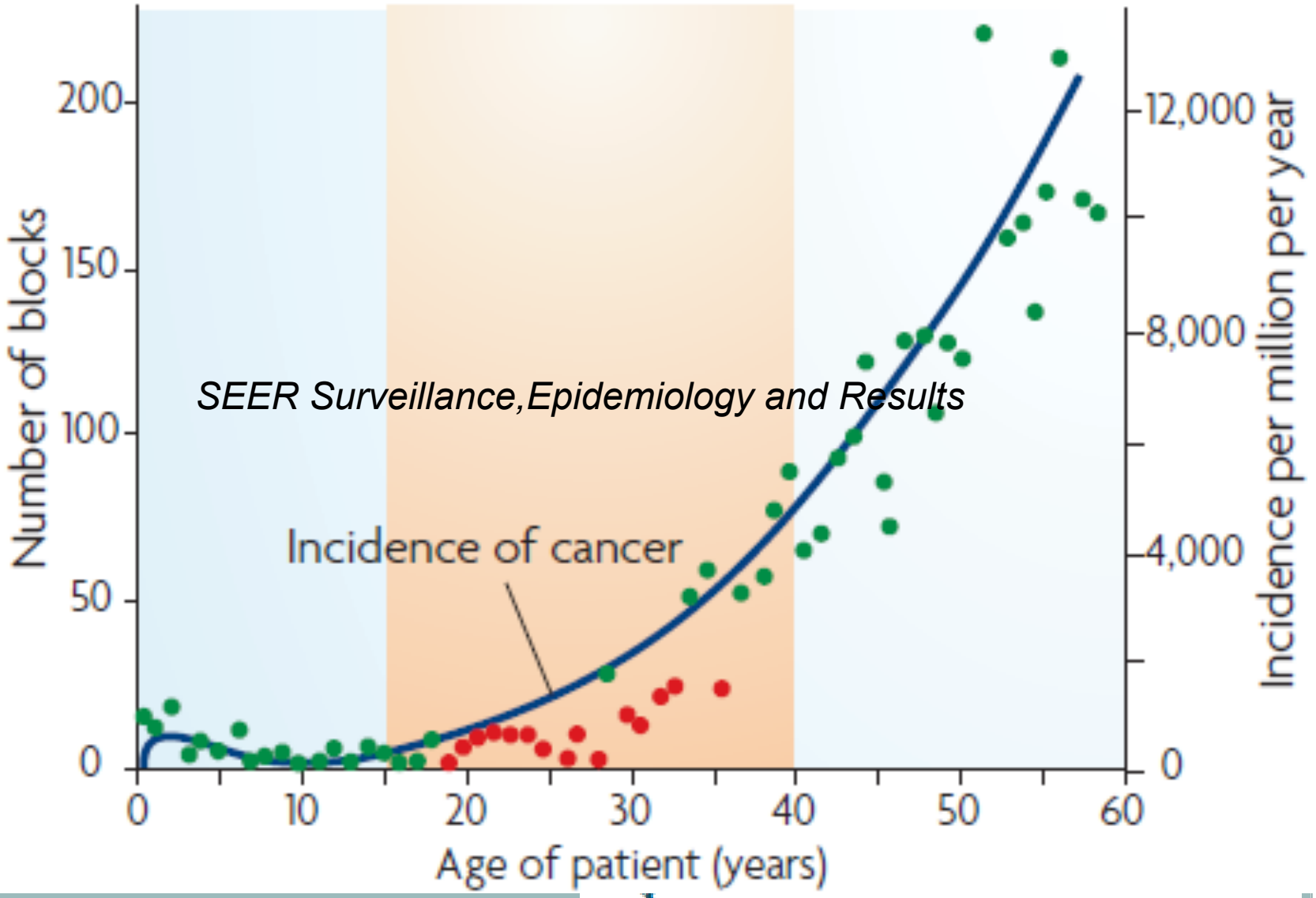




SEER Surveillance,Epidemiology and Results

Incidenza dei tumori infantili nel periodo 1998-2002 e trend di incidenza nel periodo 1998-2002 in Italia

Nel periodo **1998-2002** nelle are italiane coperte da registro tumori sono stati diagnosticati **2.156** casi, per un tasso annuale standardizzato per età di **175,4 casi per 1.000.000** rapporto **M/F di 1.3.**
Le categorie più frequenti sono le **leucemie 31.4%, i tumori del sistema nervoso centrale 19.6%, linfomi 15.8%.**Il 43% delle neoplasie si osserva nei primi 5 anni di vita con un rischio di 1.17 per 1000 bambini.
I tassi di incidenza sono più alti nel primo anno di vita (273.8 casi per 1.000.000).

Incidenza dei tumori infantili nel periodo 1998-2002 e trend di incidenza nel periodo 1998-2002 in Italia

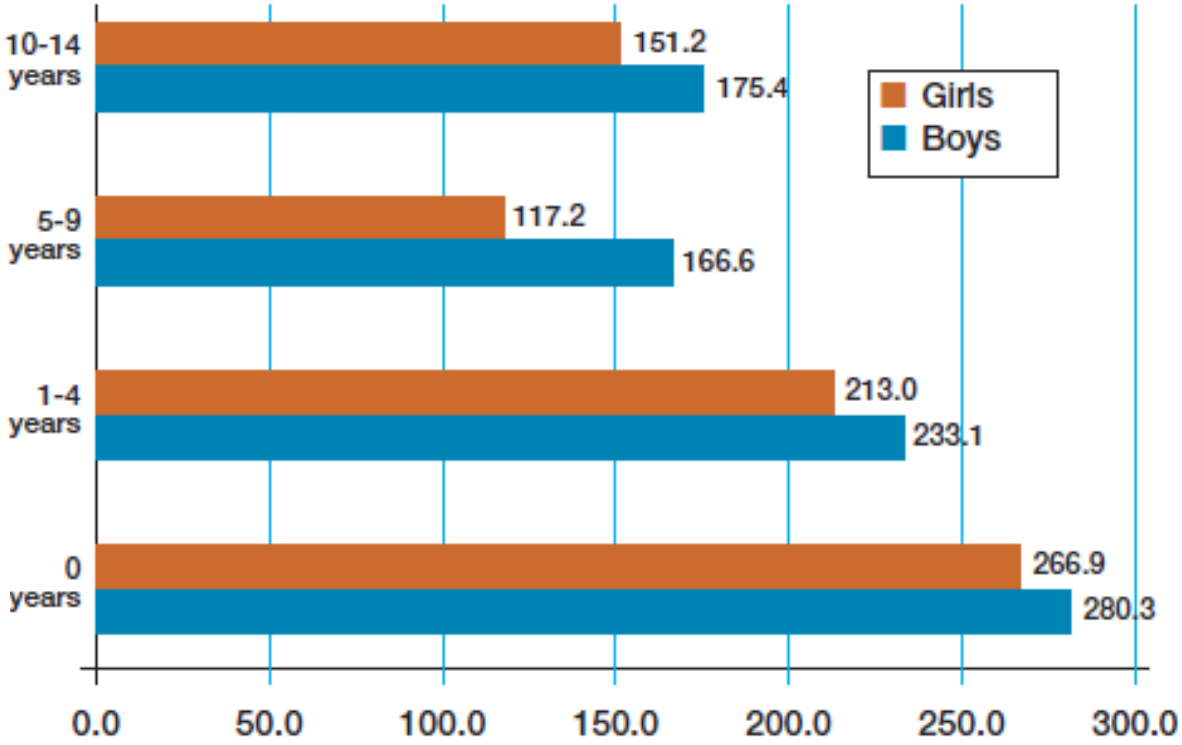


Figura 1. Incidenza di tumori infantili in Italia: i dati AIRTUM. Tassi di incidenza per sesso ed età.

n. Casi /1.000.000 di bambini

Distribuzione percentuale e numero di casi per i diversi tipi di tumore maligno in età pediatrica nella banca dati AIRTUM, 1998-2002, secondo le categorie della International Classification for Childhood Cancer (ICCC).

ICCC	0	1-4	5-9	10-14	n	%
IVa Neuroblastoma and ganglioneuroblastoma	66	68	15	6	155	96
IVb Other sympathetic nervous system tumors	0	2	2	2	6	4
IV Sympathetic nervous system tumors	66	70	17	8	161	100
IXe Unspecified sarcoma	2	3	5	5	15	14
Soft tissue sarcomas	14	30	32	31	107	100
CNS and miscellaneous intracranial and intraspinal neoplasms	34	118	133	128	413	100
X Gonadal and germ-cell malignant neoplasm	9	19	6	26	60	3
XI Carcinoma and other epithelial malignant tumours	4	5	12	63	84	4
XII Other and unspecified malignant neoplasm	14	18	13	15	60	3
TOTALE/TOTAL	222	709	568	657	2156	100

POOL AIRTUM. 2000-2005. Tassi grezzi per fascia di età. Casi x 1.000.000 anni/persona

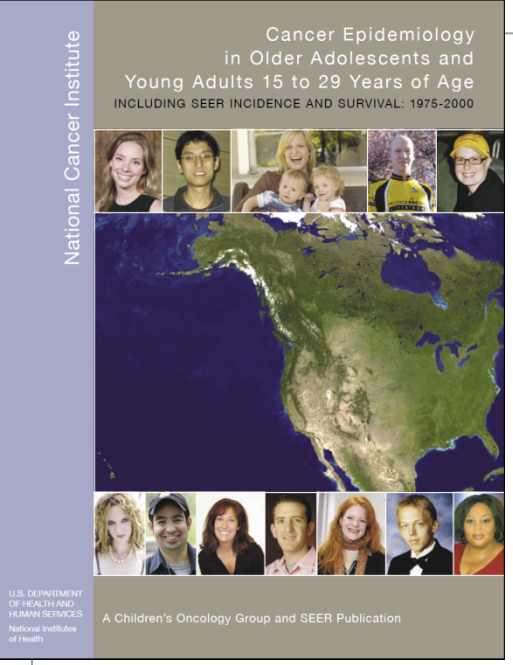
Sede	Età	Male and female Rate 95%CI		
tumor	00-14 years	3,0	2,2	3,9
	15-19 years	2,3	1,3	3,9
	20-44 years	2,1	1,7	2,7
	45-74 years	2.7	2,2	3,2
	75+	0,9	0,4	1,7
embryonal tumors	00-14 years	7,2	6,0	8,5
	15-19 years	3,4	2,2	5,2
	20-44 years	1.7	1,3	2,2
	45-74 years	0,5	0,3	0,8
	75+	0,0	0,0	0,4

POOL AIRTUM. 2000-2005. Tassi grezzi per fascia di età. Casi x 1.000.000 anni/persona

Sede	Età			
neuroblastoma	00-14 years	13,1	11,5	14,9
	15-19 years	0,8	0,3	1,8
	20-44 years	0,4	0,2	0,6
	45-74 years	0,4	0,2	0,7
	75+	0,3	0,1	0,9
of bone	00-14 years	3,6	2,8	4,6
	15-19 years	4,2	2,8	6,1
	20-44 years	1,1	0,8	1,5
	45-74 years	0,3	0,1	0,5
	75+	0,0	0,0	0,4
IX-a Rhabdomyosarcomas	00-14 years	4,9	3,9	6,0
	15-19 years	3,6	2,3	5,4
	20-44 years	0,9	0,6	1,3
	45-74 years	1,6	1,2	2,1
	75+	2,3	1,5	3,5

POOL AIRTUM. 2000-2005. Tassi grezzi per fascia di età. Casi x 1.000.000 anni/persona

Sede	Età			
VI-a Nephroblastoma and other nonepithelial renal VI-a Nephroblastoma and other nonepithelial renal	00-14 years	8,1	6,8	9,5
	15-19 years	0,0	0,0	0,6
	20-44 years	0,1	0,0	0,3
	45-74 years	0,4	0,2	0,7
	75+	0,1	0,0	0,6
III-b Astrocytomas	00-14 years	7,0	5,9	8,3
	15-19 years	6,4	4,6	8,7
	20-44 years	15,2	14,0	16,5
	45-74 years	81,9	79,1	84,8
	75+	45,4	41,3	49,8



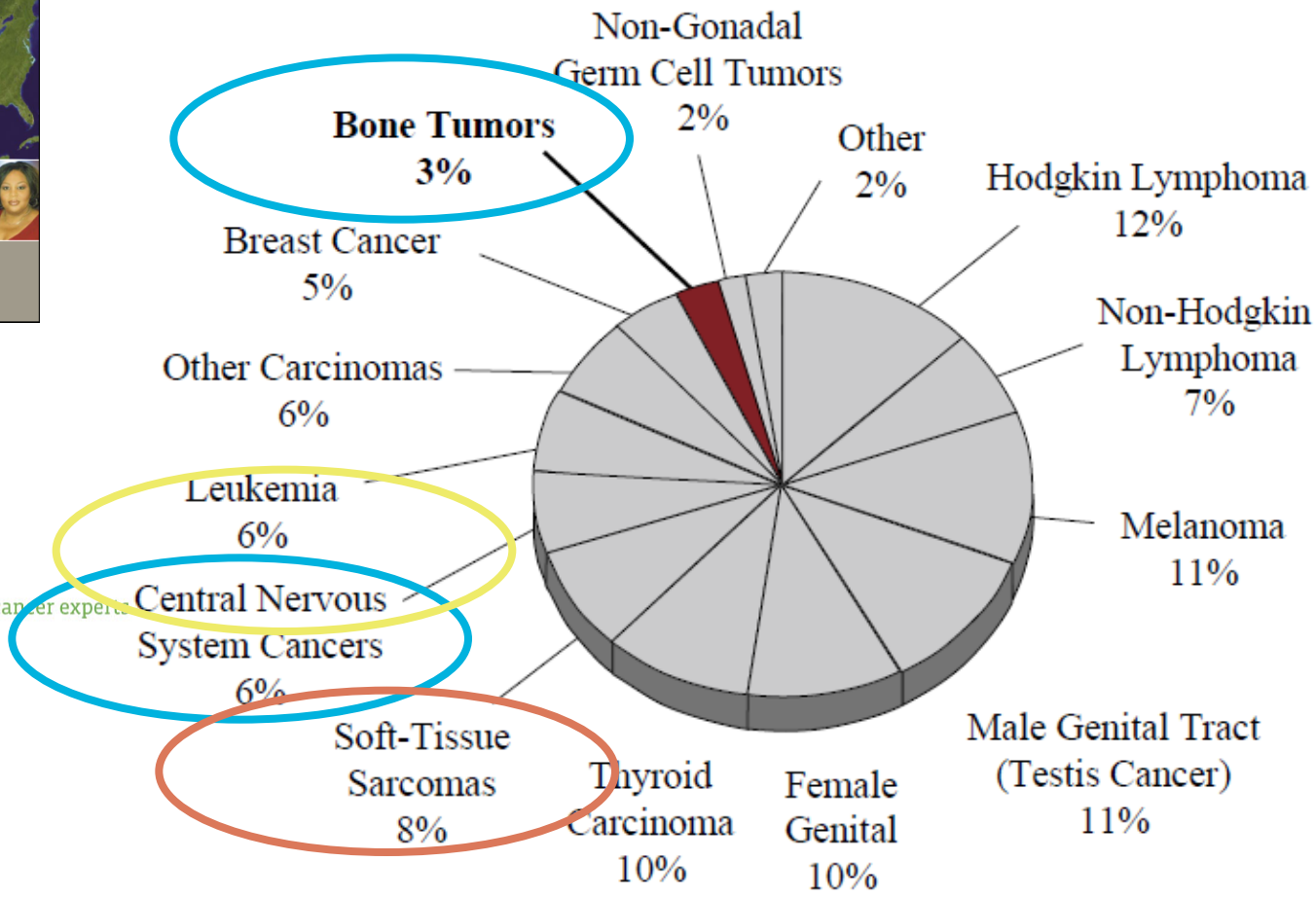
SEER

Surveillance, Epidemiology, and End Results Program

CHILDREN'S ONCOLOGY GROUP

The world's childhood cancer experts

Cancer in 15- to 29-Year-Olds in the United States



TUMORI CEREBRALI

Medulloblastoma

Ependimoma

Astrocitoma pilocitico

TUMORI DEL SISTEMA SIMPATICO

Neuroblastoma

TUMORI RENALI

Tumore di Wilms

TUMORI OSSEI

Tumore di Ewing

TUMORI DEI TESSUTI MOLLI

Rabdomiosarcoma

TUMORI CEREBRALI

- EMBRYONAL TUMORS

  MEDULLOBLASTOMA

  CSN PRIMITIVE NEUROECTODERMAL TUMOR (PNET)

  ATYPICAL TERATOIDE

- EPENDYMAL TUMORS

  Ependymoma

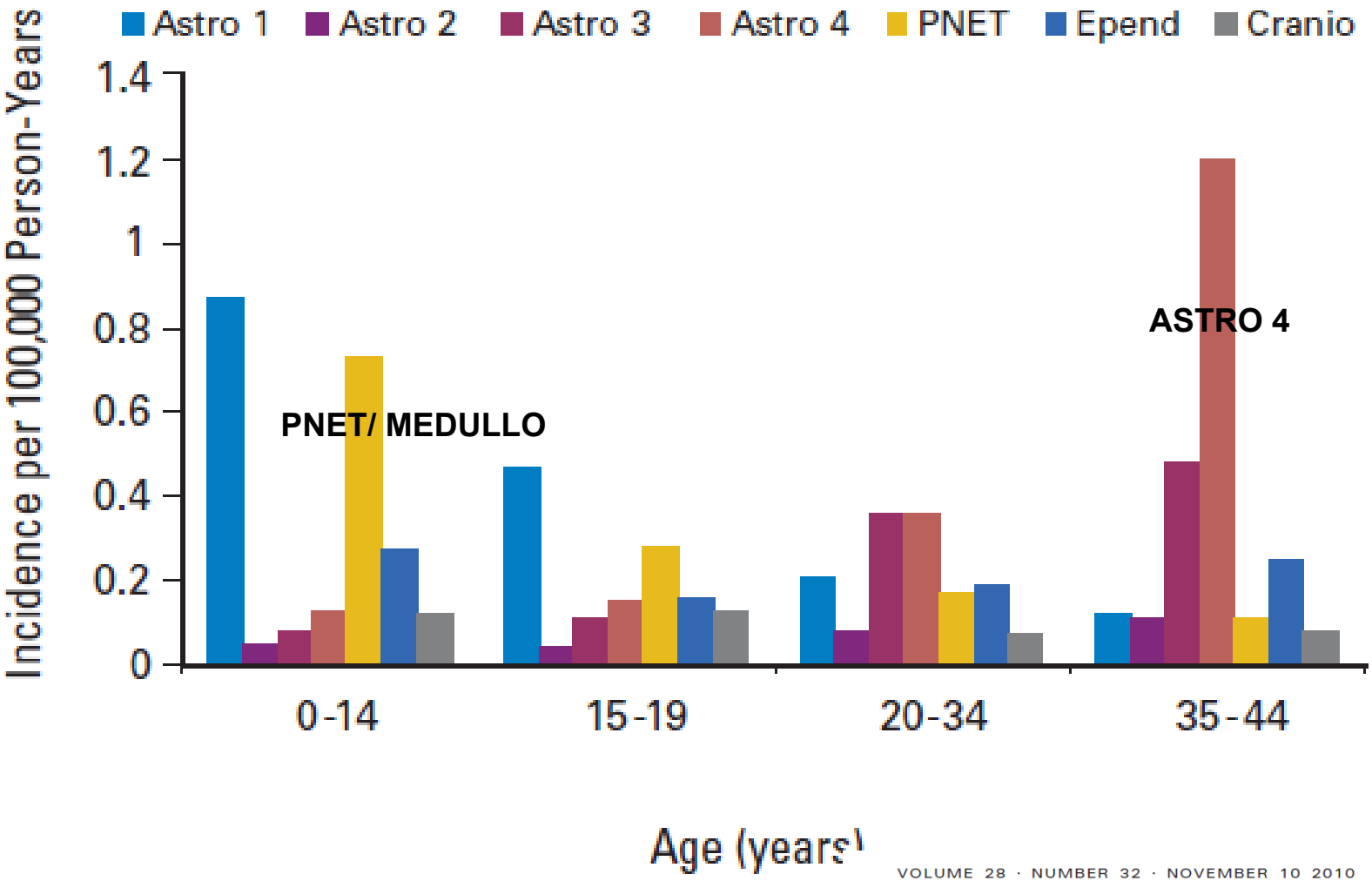
  Anaplastic ependymoma

- ASTROCYTIC TUMORS

Brain Tumors: From Childhood Through Adolescence Into Adulthood

Mark W. Kieran, David Walker, Didier Frappaz, and Michael Prados

SEER Surveillance, Epidemiology and Results 1975-1988



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JOURNAL OF CLINICAL ONCOLOGY

TUMORI CEREBRALI

- EMBRYONAL TUMORS

  MEDULLOBLASTOMA

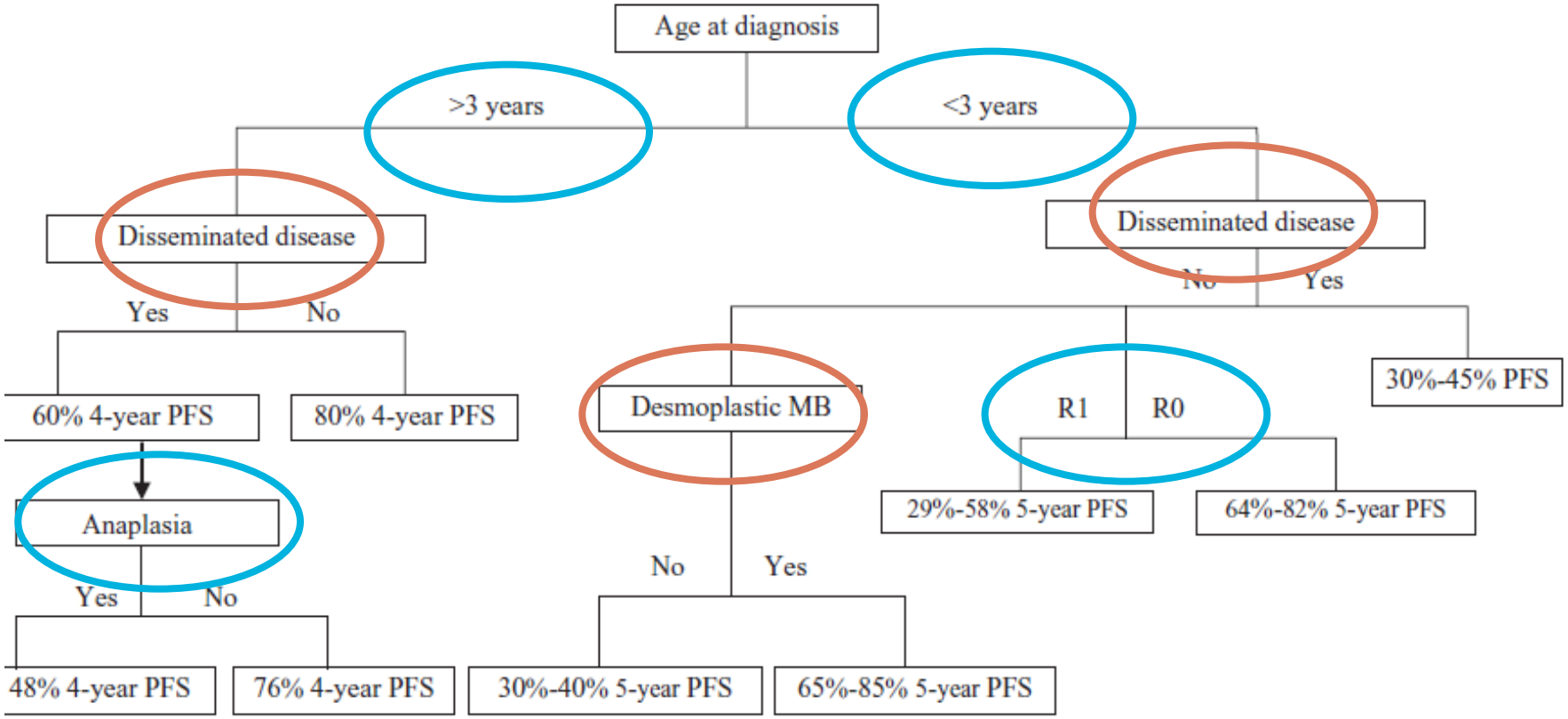
  CSN PRIMITIVE NEUROECTODERMAL TUMOR (PNET)

  ATYPICAL TERATOIDE

- EPENDYMAL TUMORS

- ASTROCYTIC TUMORS

MEDULLOBLASTOMA



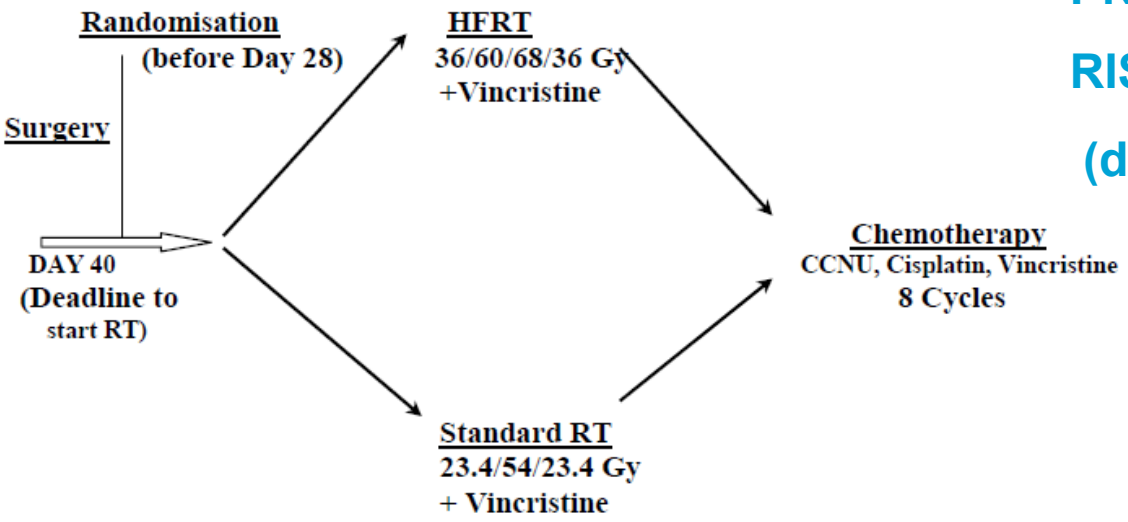
Journal of Child Neurology
Volume 24 Number 11
November 2009 1418-1430

SOCIÉTÉ INTERNATIONALE D'ONCOLOGIE PÉDIATRIQUE
INTERNATIONAL SOCIETY OF PAEDIATRIC ONCOLOGY

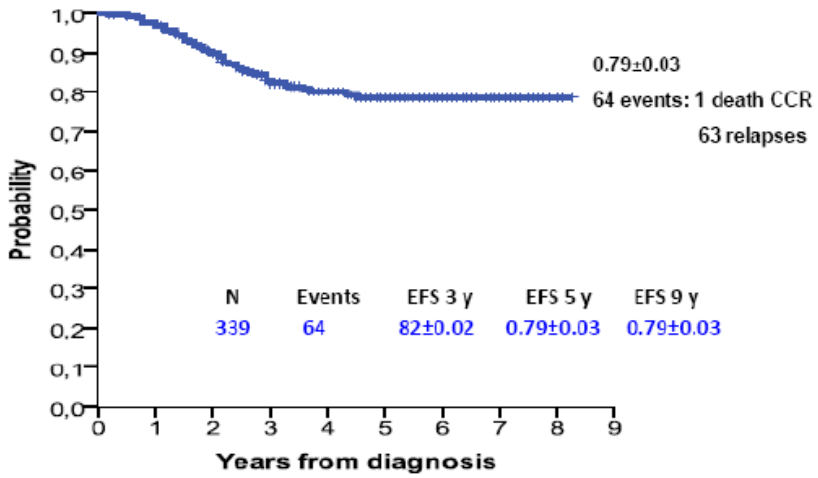
PNET 4

RISCHIO standard

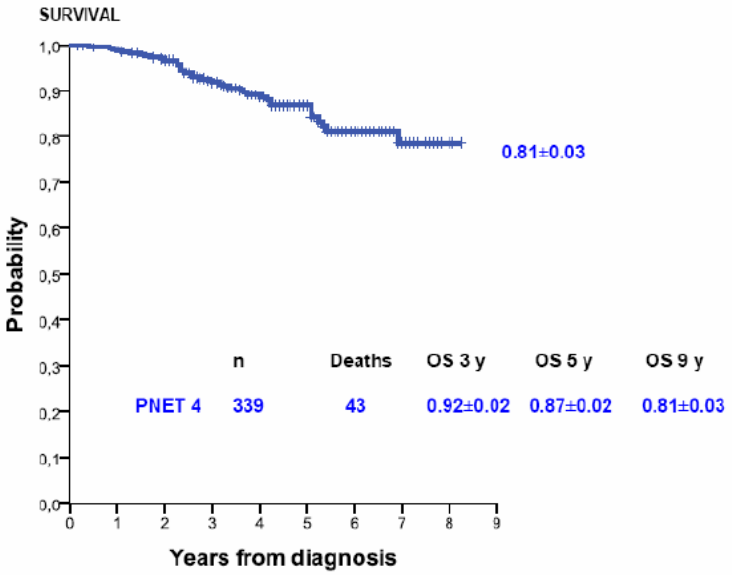
(dal 2001 al 2006)



PNET 4 Event Free Survival n=339



PNET 4 Overall Survival



SOCIÉTÉ INTERNATIONALE D'ONCOLOGIE PÉDIATRIQUE

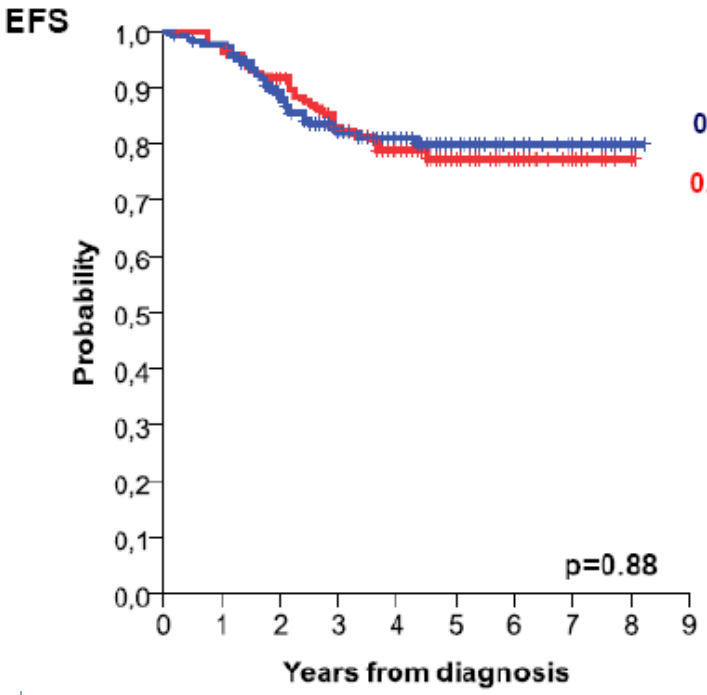
SIOP

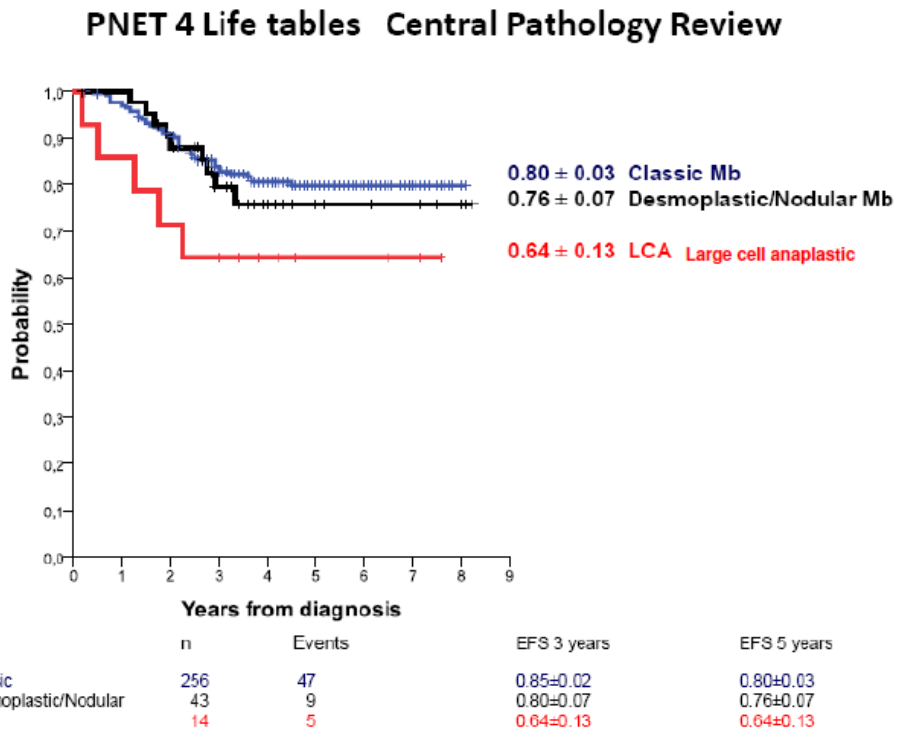
INTERNATIONAL SOCIETY OF PAEDIATRIC ONCOLOGY

PNET 4

RISCHIO standard

(dal 2001 al 2006)





	n	Events	EFS 3 years	EFS 5 years
Classic	256	47	0.85±0.02	0.80±0.03
Desmoplastic/Nodular	43	9	0.80±0.07	0.76±0.07
LCA-	14	5	0.64±0.13	0.64±0.13

Hyperfractionated Accelerated Radiotherapy in the Milan Strategy for Metastatic Medulloblastoma

Lorenza Gandola, Maura Massimino, Graziella Cefalo, Carlo Solero, Filippo Spreafico, Emilia Pecori, Daria Riva, Paola Collini, Emanuele Pignoli, Felice Giangaspero, Roberto Luksch, Serena Berretta, Geraldina Poggi, Veronica Biassoni, Andrea Ferrari, Bianca Pollo, Claudio Favre, Iacopo Sardi, Monica Terenziani, and Franca Fossati-Bellani

SURGERY

↓

HD-MTX (8 g/m²) → HD-VP16 (2.4 g/m²) → HD-CYCLO (4 g/m²) → CBDCA (800 mg/m²)

↓ ↓ ↓ ↓

0 1 4 7 weeks

↓ ↓

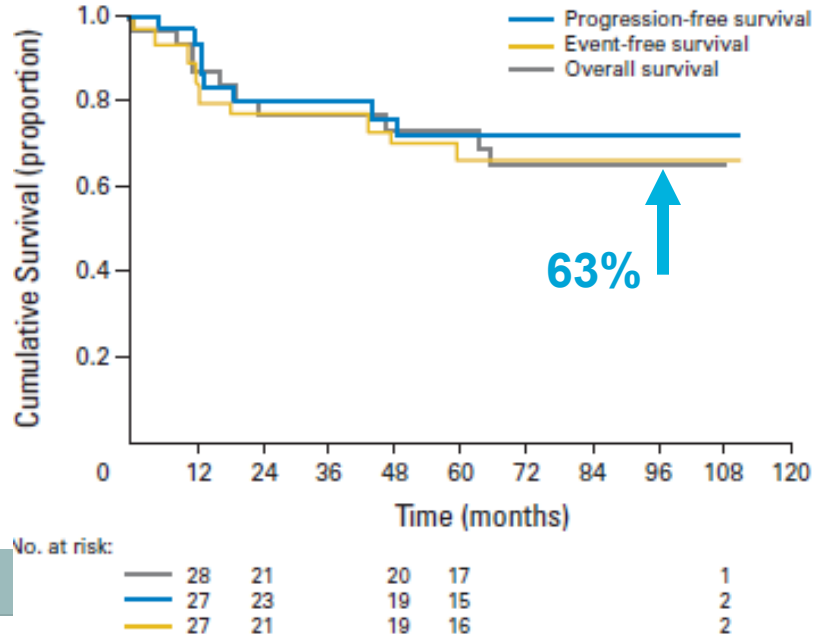
+ G-CSF for CPC harvest

HART 3-4 weeks after CBDCA

If CR pre-HART:	*If no CR pre-HART:*
4 weeks after end of RT, maintenance CT with: VCR (1.4 mg/m²) every 3 weeks × 18 CCNU (80 mg/m²) every 9 weeks × 6	4 weeks after end of RT, thiotepa (900 mg/m²) in 3 days, for 2 courses (with a 4- to 6-week interval)
.... 18 patients	.... 14 patients

CPC: circulating progenitor cells

HART doses:
CSI 39 Gy if patients ≥ 10 years...25 patients
CSI 31.2 Gy if patients < 10 years...7 patients



HART:

Dose craniospinale:

39 Gy/1.3 Gy/2 fx die per pz >10 aa

31.2 Gy/1.3 Gy/2 fx die per pz < 10aa

Fossa posteriore :21 Gy/1,5 Gy/2 fx/ die + boost in caso di residuo 9 Gy/ 2fx/die

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JOURNAL OF CLINICAL ONCOLOGY

Relative Survival of Childhood and Adult Medulloblastomas and Primitive Neuroectodermal Tumors (PNETs)

SEER data base 2774 pts 2037 medulloblastomas 737 PNET

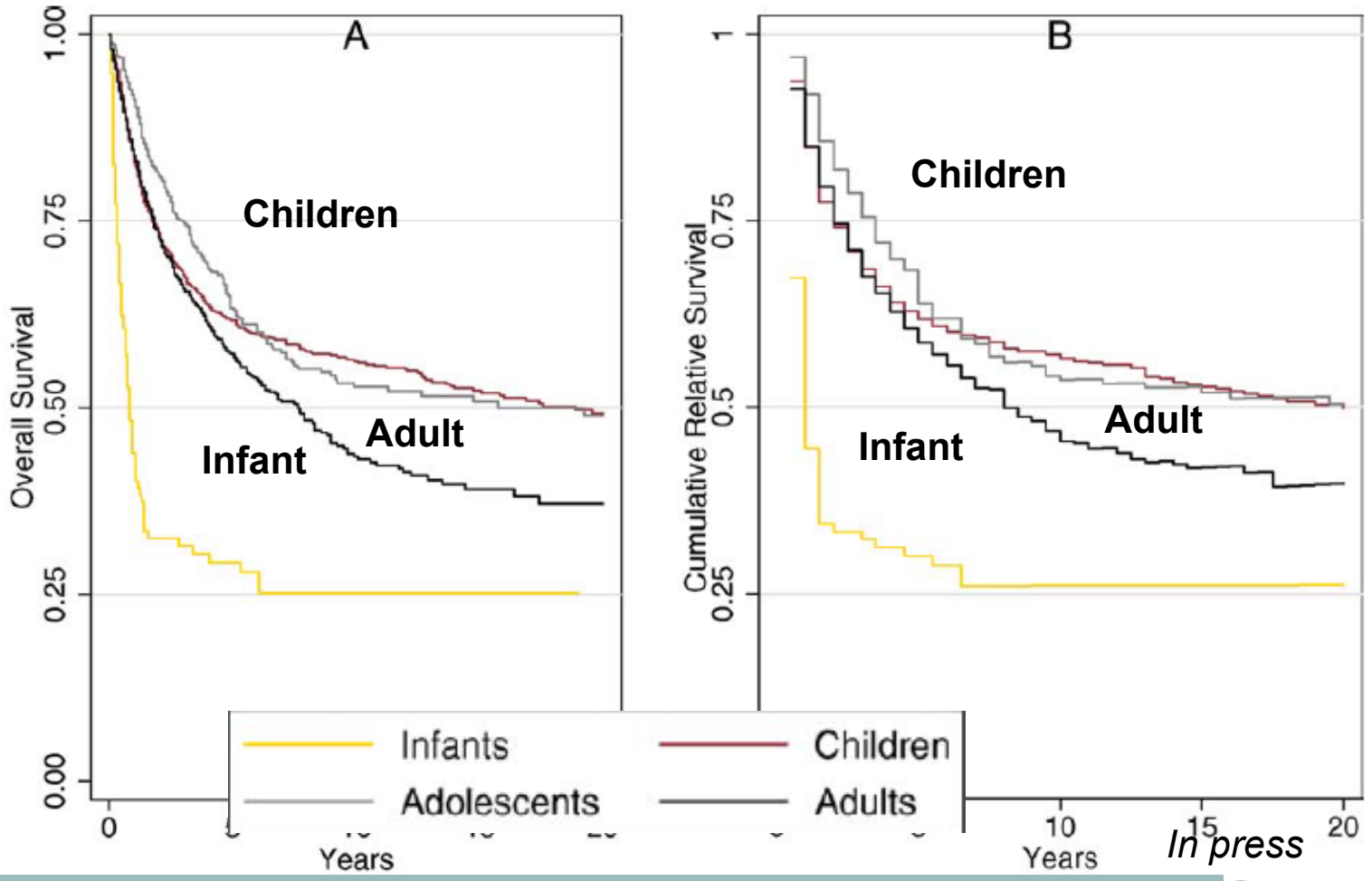
2033 (Aged 0-19) 741 Adult

	INFANT Aged <1 %	CHILDREN Aged >1-9 %	ADOLESCENT Aged 10-19 %	ADULT Aged >20 %
Tumor location				
Supratentorial	12	12	11	12
Infratentorial	65	77	77	78
other	22	11	12	10
Hystology				
Medulloblastoma	61	73	76	75
PENT	39	27	24	25
Radiation				
None	82	26	13	19
Radiation	24	74	87	81
Surgery				
No surgery	16	6	10	9
Yes surgery	84	94	90	91

In press Cancer

Original Article

Relative Survival of Childhood and Adult Medulloblastomas and Primitive Neuroectodermal Tumors (PNETs)



In press

Cancer

Original Article

Relative Survival of Childhood and Adult Medulloblastomas and Primitive Neuroectodermal Tumors (PNETs)

Esame degli Hazards rate per fasce di età: *N.eventi / somma dei follow-up*

Age Group	Year 1	Year 2	Year 3	Year 4	Year 5
Children	1.00 (1.00-1.00)	1.07 (0.79-1.43)	0.70 (0.49-1.00)	0.61 (0.41-0.90)	0.26 90.14-0.46)
Adolescents	0.57 (0.36-0.92)	1.79 (0.96-3.34)	1.68 90.81-3.47)	2.08 (0.98-4.42)	4.45 (1.79-11.06)
Adults	0.98 (0.69-1.38)	1.18 (0.72-1.93)	1.28 (0.72-2.28)	1.08 (0.56-2.10)	2.60 (1.15-5.89)

Dallo studio dell'hazards rate emerge che tra bambini e adulti il rischio di morire è uguale fino al 4 anno.

Dopo il 5 anno per gli adulti il rischio aumenta in modo significativo.

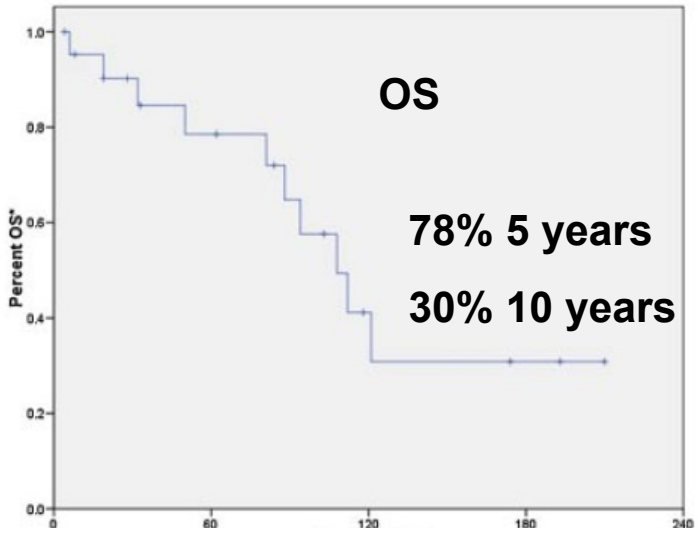
Pediatr Blood Cancer 2008;51:603–607

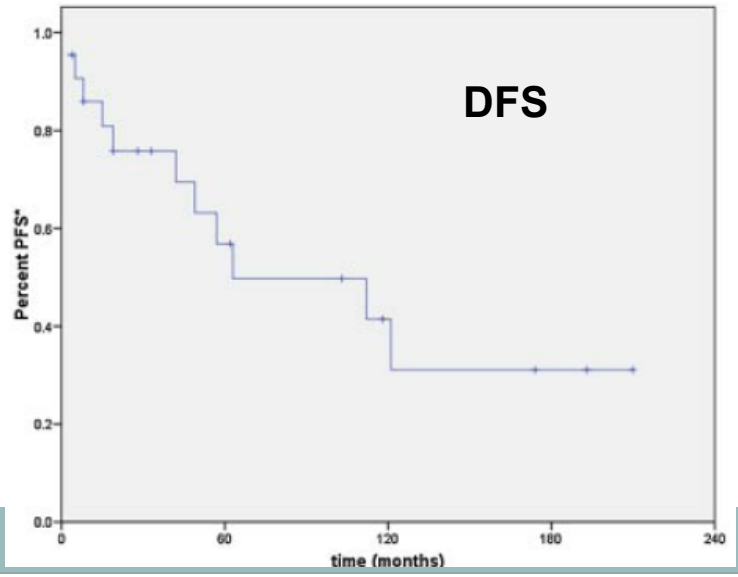
Characteristics and Outcomes of Medulloblastoma in Adults

1989-2005

25 pts/ Montreal-Canada

Treatment modality	Number
Extent of surgical resection (N = 24)[a]	
<1.5 cm^2 residual	13
≥1.5 cm^2 residual	11
Radiation dose (N = 23)[b]	
Posterior fossa	
50–56 Gy	19
Craniospinal axis	
23.4–28.8 Gy	3
35–39.6 Gy	16
Chemotherapy	
Concurrent chemoradiation: yes/no	7/18
Adjuvant chemo: yes/no	13/12
CCG 921[c]	1
POG 9031[d]	6
VCR, CCNU	1
House protocol[e]	4
Awaiting maintenance chemo	1





COMMON STRATEGY FOR ADULT AND PEDIATRIC MEDULLOBLASTOMA: A MULTICENTER SERIES OF 253 ADULTS

1973-2004 13 French centers/ 253 adults

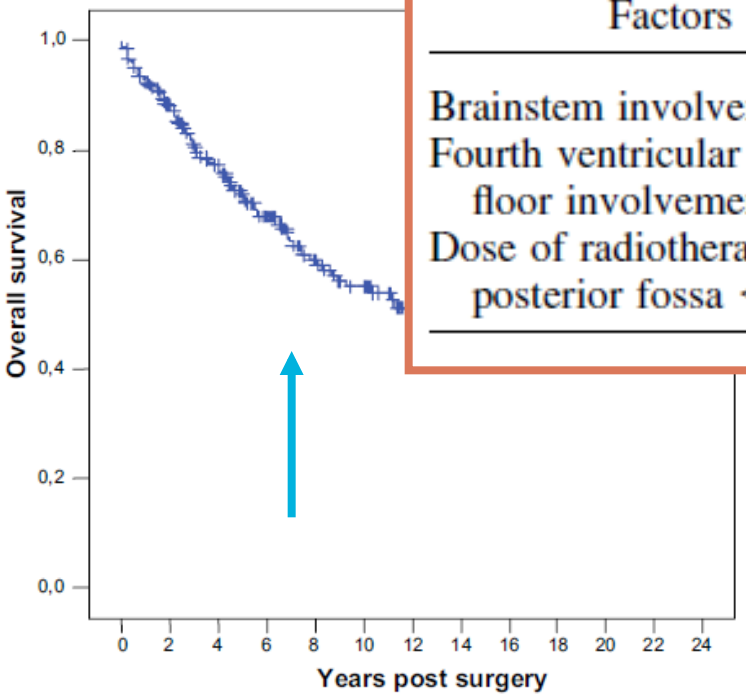
Total surgery 187 pts

RT 232 pts

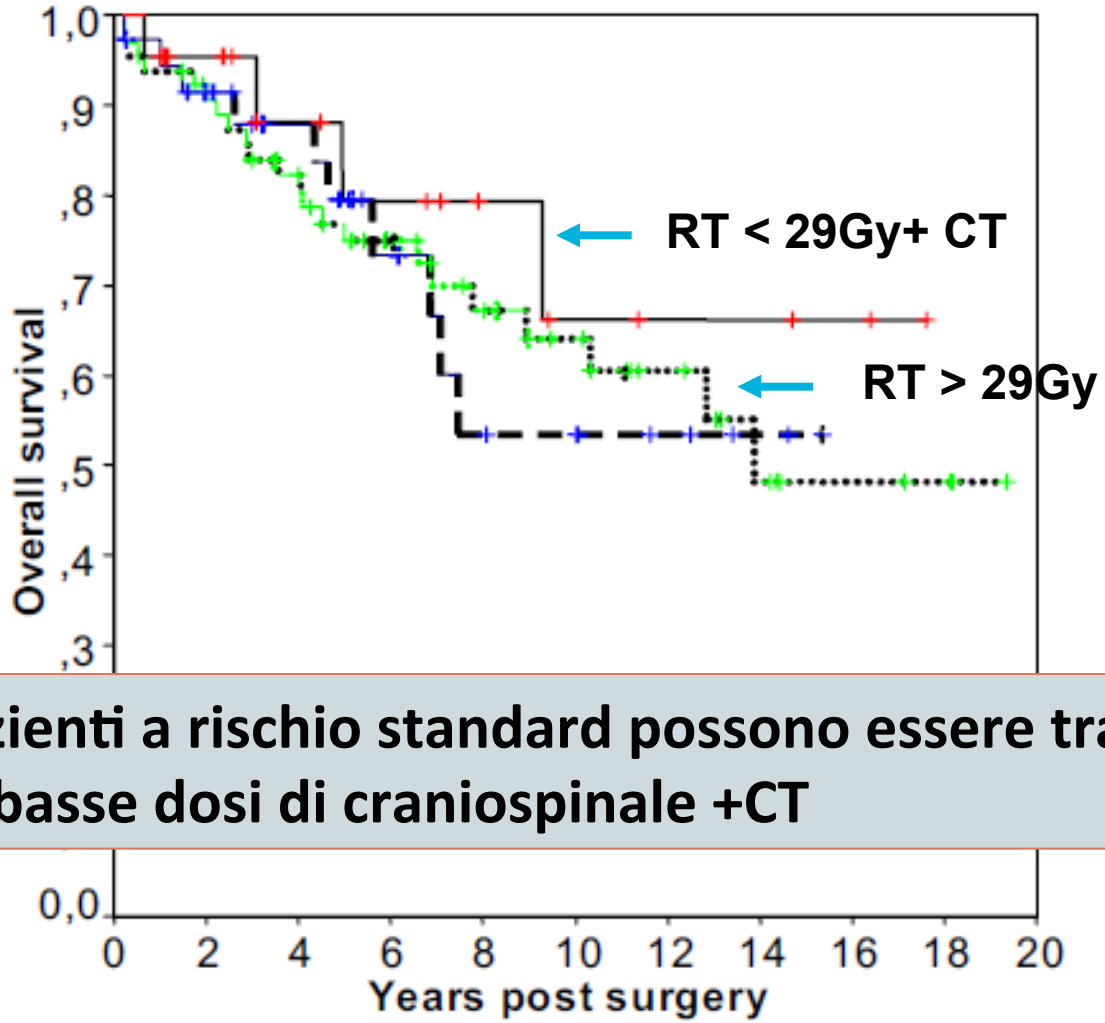
CTadiuvant 143

Table 3. Multivariate analysis

Factors	Relative risk	95% confidence interval	*p*
Brainstem involvement (+)	2.7	1.2–5.9	0.017
Fourth ventricular (V4) floor involvement (+)	2.2	1.3–3.7	0.002
Dose of radiotherapy to the posterior fossa <50 Gy	2.7	1.3–5.8	0.009



COMMON STRATEGY FOR ADULT AND PEDIATRIC MEDULLOBLASTOMA: A MULTICENTER SERIES OF 253 ADULTS



I pazienti a rischio standard possono essere trattati con basse dosi di craniospinale +CT

Int. J. Radiation Oncology Biol. Phys., Vol. 68, No. 2, pp. 433–440, 2007

ELSEVIER

Critical Reviews in Oncology/Hematology 71 (2009) 165–179

CRITICAL REVIEWS IN
Oncology
Hematology
Incorporating Geriatric Oncology

www.elsevier.com/locate/critrevonc

Review

Adult neuroectodermal tumors of posterior fossa (medulloblastoma) and of supratentorial sites (stPNET)

Alba A. Brandes [a,*], Enrico Franceschi [a], Alicia Tosoni [a], Michele Reni [b], Gemma Gatta [c], Charles Vecht [d], Rolf D. Kortmann [e]

Differenze tra bambini / adulti

1. Sede linea mediana / lobo cerebellare
2. MB classico/ desmoplastico (50/70 %)
3. Frequenza di M+ all'esordio 25%/ 13%
4. Meno incidenza di REC/ maggiore incidenza di REC dopo lungo follow-up
5. variazioni genetiche

VOLUME 28 · NUMBER 18 · JUNE 20 2010

JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

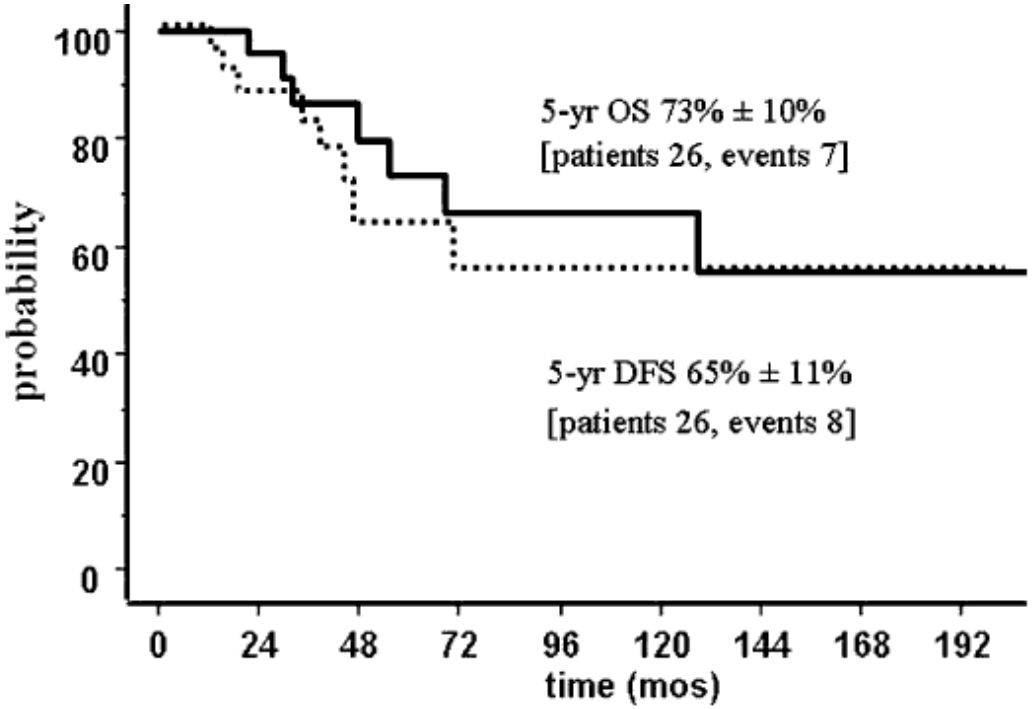
Adult and Pediatric Medulloblastomas Are Genetically Distinct and Require Different Algorithms for Molecular Risk Stratification

	Pediatric	Adult
MYC amplificato	*prognosi peggiore*	*raro*
CDK6 amplificato		*esclusivo*
Delezione cromos 6	*Buona prog.*	*Indifferente*
Attivazione β catenine	*Buona prog*	*Indifferente*
10q-17q		*prognosi peggiore*

Survival of adults treated for medulloblastoma using paediatric protocols

Filippo Spreafico [a,*], Maura Massimino [a], Lorenza Gandola [b], Graziella Cefalo [a], Elena Mazza [a], Giuseppe Landonio [c], Emanuele Pignoli [d], Geraldina Poggi [e], Monica Terenziani [a], Paolo Pedrazzoli [c], Salvatore Siena [c], Franca Fossati-Bellani [a]

surgery	HD-MTX 8 g/m^2 VCR 1.4 mg/m^2	HD-ETO 2.4 g/m^2 (G-CSF)	HD-CYCLO 4 g/m^2 (G-CSF)	CBDCA 800 mg/m^2 VCR 1.4 mg/m^2	HART	CCNU 80 mg/m^2 every 9 wks x 6 VCR 1.4 mg/m^2 every 3 wks x 18
weeks	0	1	4	7	10	3-4 wks following HART



European Journal of Cancer 41 (2005) 1304–1310

TUMORI CEREBRALI

- EPENDYMAL TUMORS

  Ependymoma

  Anaplastic ependymoma

- ASTROCYTIC TUMORS

Conformal radiotherapy after surgery for paediatric ependymoma: a prospective study

Thomas E Merchant, Chenghong Li, Xiaoping Xiong, Larry E Kun, Frederic A Boop, Robert A Sanford

Risultati dopo CH+RT

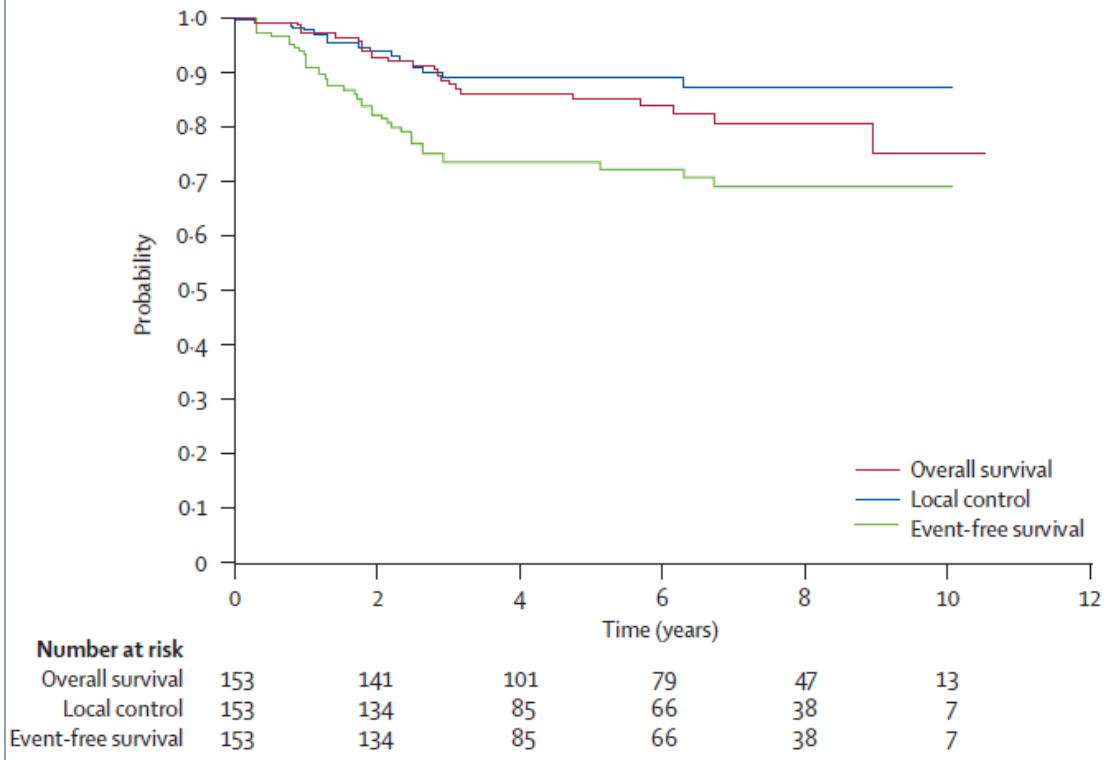
	Time period	Patients, n	5-year EFS	10-year EFS	5-year OS	10-year OS
Merchant (present)	1997–2007	153	74%	69%	85%	75%
Akyuz[18]	1972–91	62	..	36%	..	50%
Perilongo[19]	1977–93	92	..	35%	..	56%
Shu[20]	1980–2000	49	41%	31%	66%	56%
Oya[21]	1961–99	48	42%	42%	62%	47%
Pollack[22]	1975–93	40	46%	36%	57%	45%
Jaing[23]	1985–2002	43	46%	..	54%	..
Van Veelan-Vincent[24]	1980–99	83	48%	46%	73%	51%
Robertson[25]	1986–92	32	50%	..	64%	..
Mansur[26]	1964–2000	60	58%	46%	71%	55%

EFS=event-free survival. OS=overall survival.

Table 3: Event-free survival and overall survival estimates from selected radiotherapy series reporting 5-year and 10-year outcomes

Conformal radiotherapy after surgery for paediatric ependymoma: a prospective study

Thomas E Merchant, Chenghong Li, Xiaoping Xiong, Larry E Kun, Frederic A Boop, Robert A Sanford



Number at risk						
Overall survival	153	141	101	79	47	13
Local control	153	134	85	66	38	7
Event-free survival	153	134	85	66	38	7

N.Pazienti 153

CH+ RT dose totale 5940 cGy

107/153 pz sottoposti a RT subito dopo la CH

Controllo locale: 88.7%

EFS : 76.9%

OS : 85%

Original Article

Clinical Course of Adult Patients With Ependymoma

Results of the Adult Ependymoma Outcomes Project

Ependymoma Outome Project and Collaborative Ependymoma Research network 118 patients

Tumor location

Brain	52(44%)
Spine	**60(51%)**
Braine and spine	6(5%)

Surgery

Biopsy	7
Partial resection	32
Gross total resection	72
No surgey	2

Tumor type

Ependimoma	69(59%)
Anaplastic	14(12%)
Myxipapillary	16(14%)

Additional Treatment after Surgery

Radiation therapy	**30 (25%)**
Ct+RT	15(13%)
None	**64(54%)**

Cancer

In press

Original Article

Clinical Course of Adult Patients With Ependymoma

Results of the Adult Ependymoma Outcomes Project

Ependymoma Outome Project and Collaborative Ependymoma Research network 118 patients

Type of Physician	Overall
Neurosurgeon	52 (44)
Neuro-oncologist	35 (30)
Family physician or internal medicine	21 (18)
Radiation oncologist	18 (15)
Oncologist	8 (7)

In press

Adult ependymal tumors: prognosis and the M. D. Anderson Cancer Center experience

Tumor location

Brain	40
Spine	**80**

Surgery

Gross total resection	78 (63%)

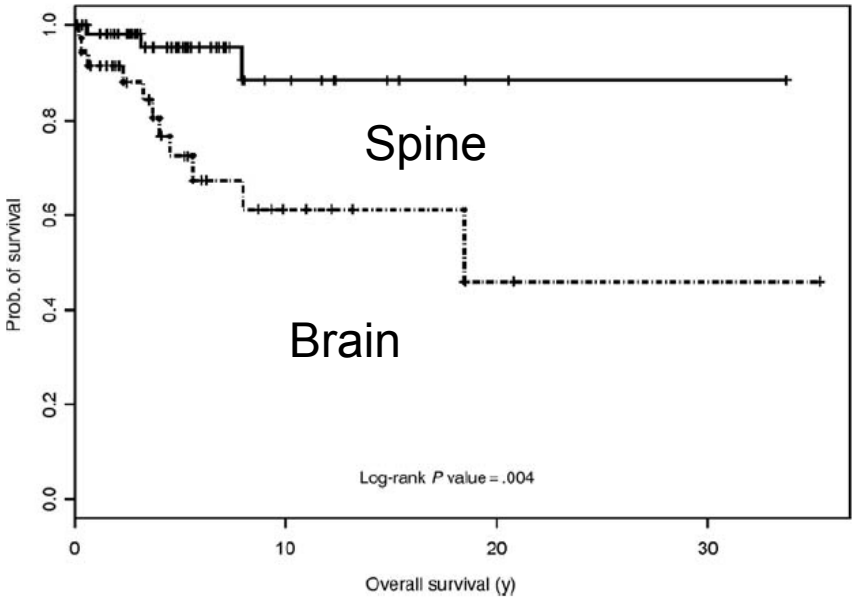
Tumor type

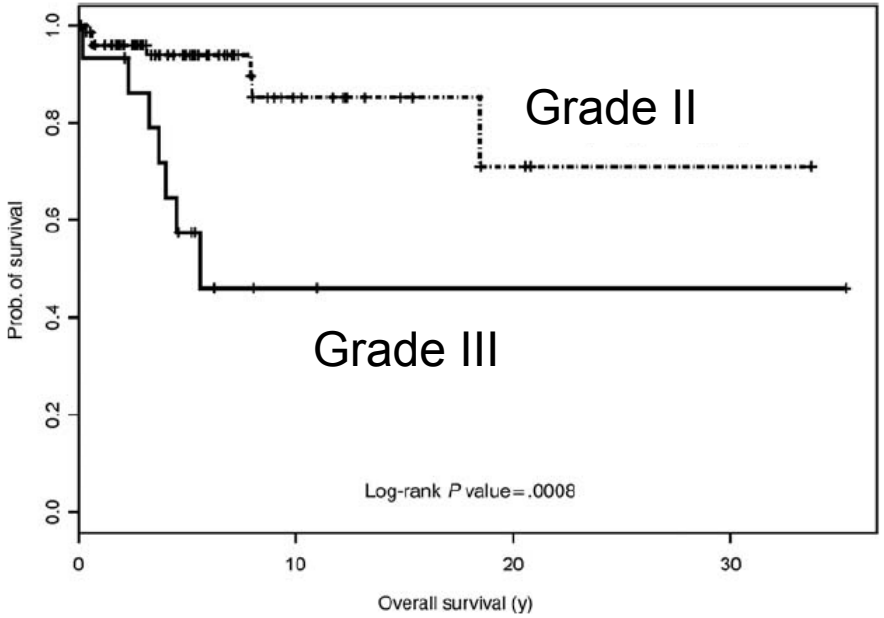
Grade II	112(91%)
Grade III	11(9%)
REC	15

Additional Treatment after Surgery

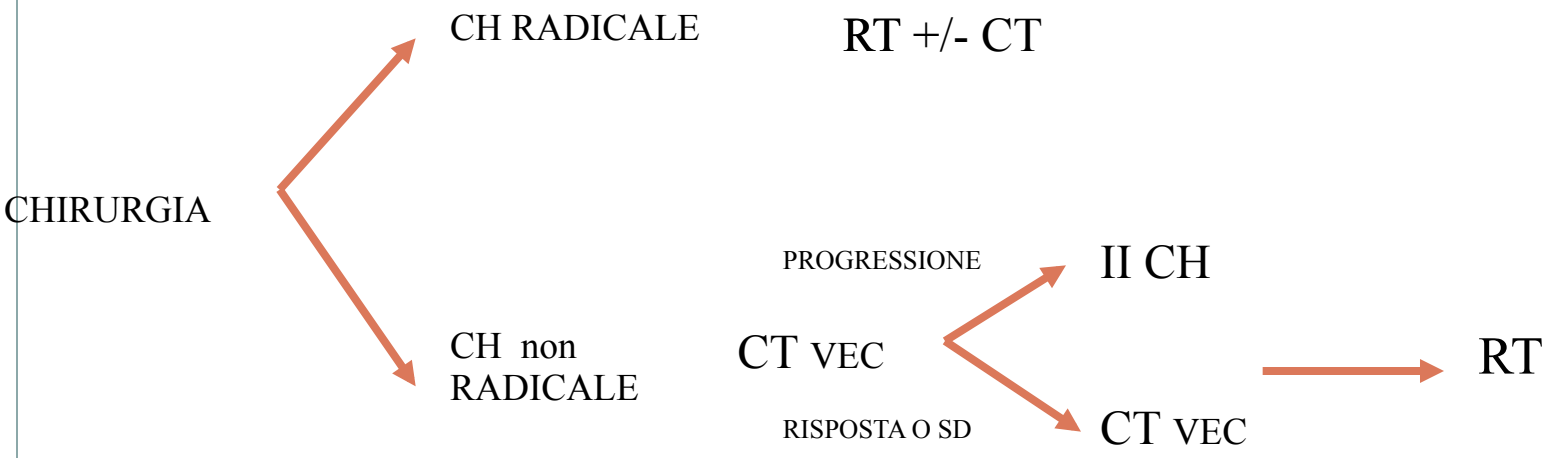
Radiation therapy	60(49%)
Chemiotherapy	16(13%)

Adult ependymal tumors: prognosis and the M. D. Anderson Cancer Center experience





Protocollo AIEOP Ependimoma in uso



RT IF dose su volumi iniziale 59.4/1.8 Gy/

RT Boost con tecniche speciali 8 Gy /2 fx(in residuo di malattia)

TUMORI CEREBRALI

- EMBRYONAL TUMORS
- EPENDYMAL TUMORS
- ASTROCYTIC TUMORS

Pilocytic

Diffuse astrocytoma

Anaplastic

Glioblastoma

Gliomatosis cerebri

Phase II Trial of Conformal Radiation Therapy for Pediatric Low-Grade Glioma

Thomas E. Merchant, Larry E. Kun, Shengjie Wu, Xiaoping Xiong, Robert A. Sanford, and Frederick A. Boop

Table 2. Pediatric Low-Grade Glioma Chemotherapy and Radiotherapy Series

Author by Type of Treatment	Year of Study	Treatment Regimen	No. of Patients	Event- or Progression-Free Survival (%)				
				2-Year	3-Year	5-Year	8-Year	10-Year
Chemotherapy								
Ater[21]	2008	CV	137			35		
		TPCV	137			48		
Gnekow[20]	2004	CV	198			61		
Massimino[19]	2002	CisVP	31		78			
Prados[18]	1997	TPCV	42	50				
Packer[17]	1997	CV	78		68			
Radiation therapy								
Marcus[27]	2005	52.2 Gy	50			82	65	
Saran[26]	2002	50-55 Gy	14		87			
Grabenbauer[29]	2000	45-60 Gy	25					69
Erkal[28]	1997	50 Gy	30			82		77
Merchant	2008	54 Gy	78			85		74

C, carboplatin; V, vincristine; T, thioguanine; P, procarbazine; Cis, cisplatin; VP, etoposide.

VOLUME 27 · NUMBER 22 · AUGUST 1 2009

JOURNAL OF CLINICAL ONCOLOGY

Phase II Trial of Conformal Radiation Therapy for Pediatric Low-Grade Glioma

Thomas E. Merchant, Larry E. Kun, Shengjie Wu, Xiaoping Xiong, Robert A. Sanford, and Frederick A. Boop

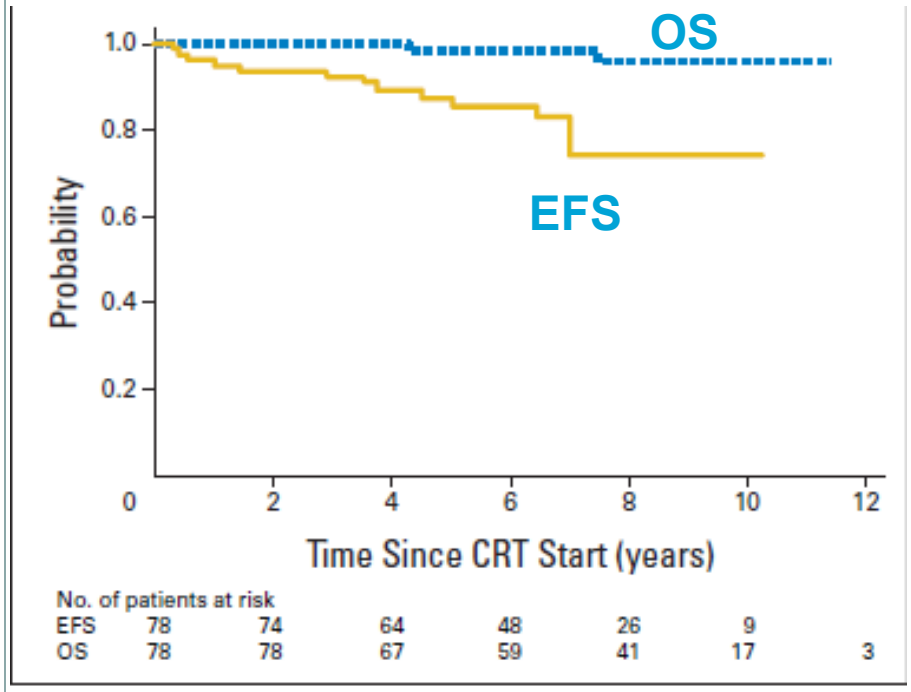


Fig 1. Event-free survival (EFS; gold line) and overall survival (OS; blue line) for pediatric patients with low-grade glioma. Numbers indicate patients at risk. CRT, conformal radiation therapy.

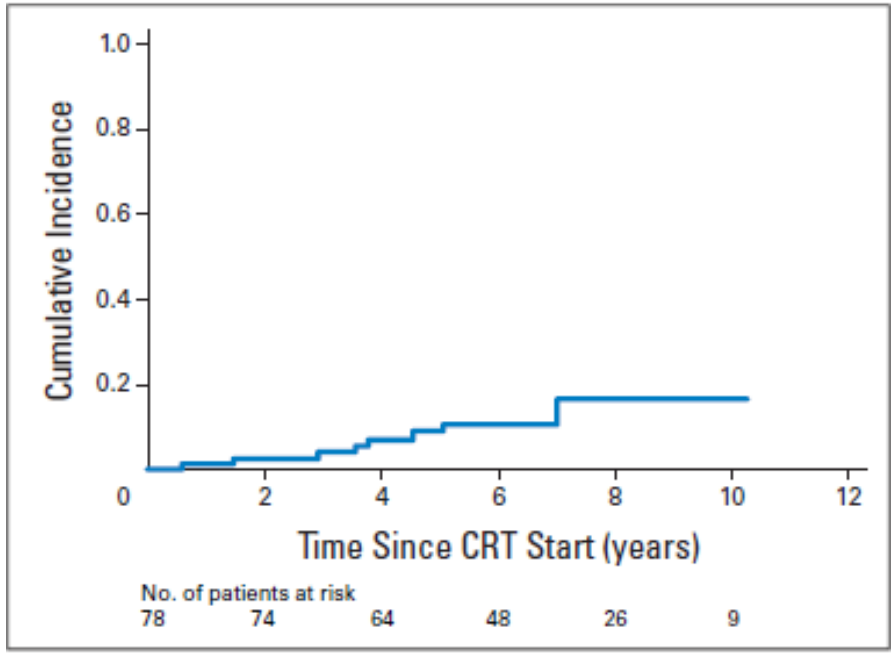
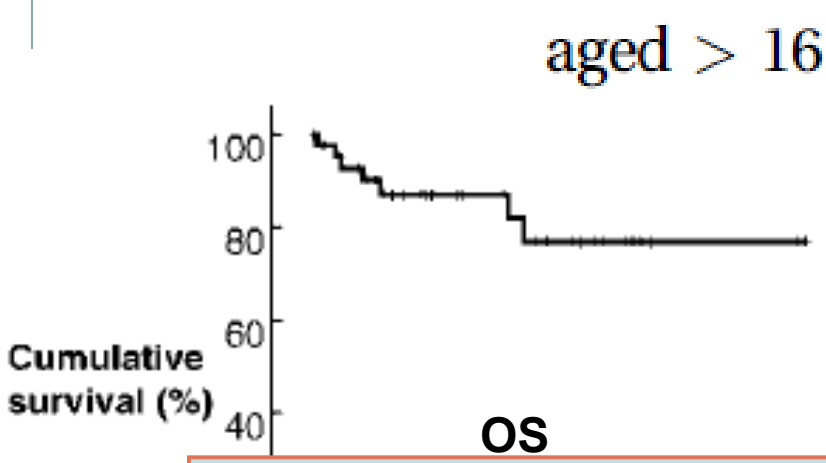


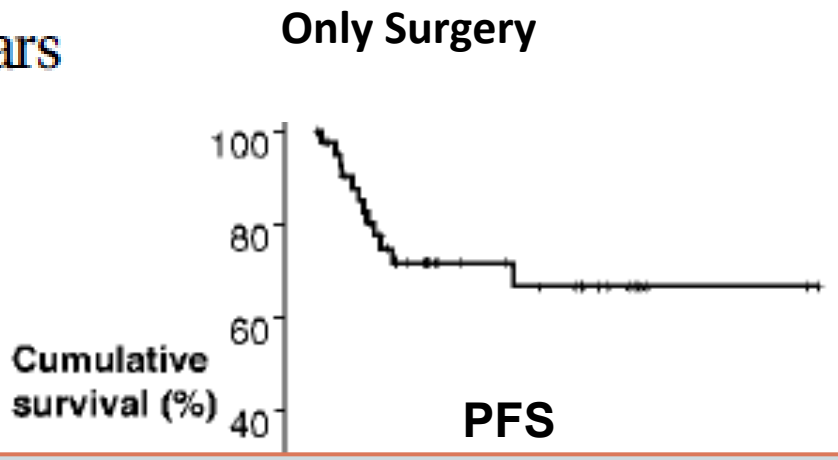
Fig 2. The cumulative incidence of local failure by tumor grade for pediatric patients with low-grade glioma. Numbers indicate patients at risk. CRT, conformal radiation therapy.

VOLUME 27 · NUMBER 22 · AUGUST 1 2009

JOURNAL OF CLINICAL ONCOLOGY

Frequent Recurrence and Progression in Pilocytic Astrocytoma in Adults





Differenze pediatrici/adulti

1. Sede vie ottiche, tronco cerebrale/**aree sopratentoriali**
2. **no associazione con Neurofibromatosis type I (NF I) , Tuberous Sclerosis, Li-Fraumeni-syndrome**
3. < rischio di evoluzione in alto grado/ **> rischio di evoluzione in alto grado**

CANCER December 15, 2007 / Volume 110 / Number 12

PROTOCOLLO APERTO

SOCIÉTÉ INTERNATIONALE D'ONCOLOGIE PÉDIATRIQUE
INTERNATIONAL SOCIETY OF PAEDIATRIC ONCOLOGY

SIOP – LGG 2004
Cooperative multicenter Study for Children and Adolescents with Low Grade Glioma

CHIRURGIA — no residuo → Follow-up

si residuo

Progressione/sintomatico → Chirurgia
- >8 anni → RT
- < 8 anni → CT

NO progressione/sintomatico → Follow-up

Recidiva → Chirurgia

RABDOMIOSARCOMA

Embryonal-botryiod

Embrionale- spindle cell

Embrional-not othewise specfied

Alveolar-classic

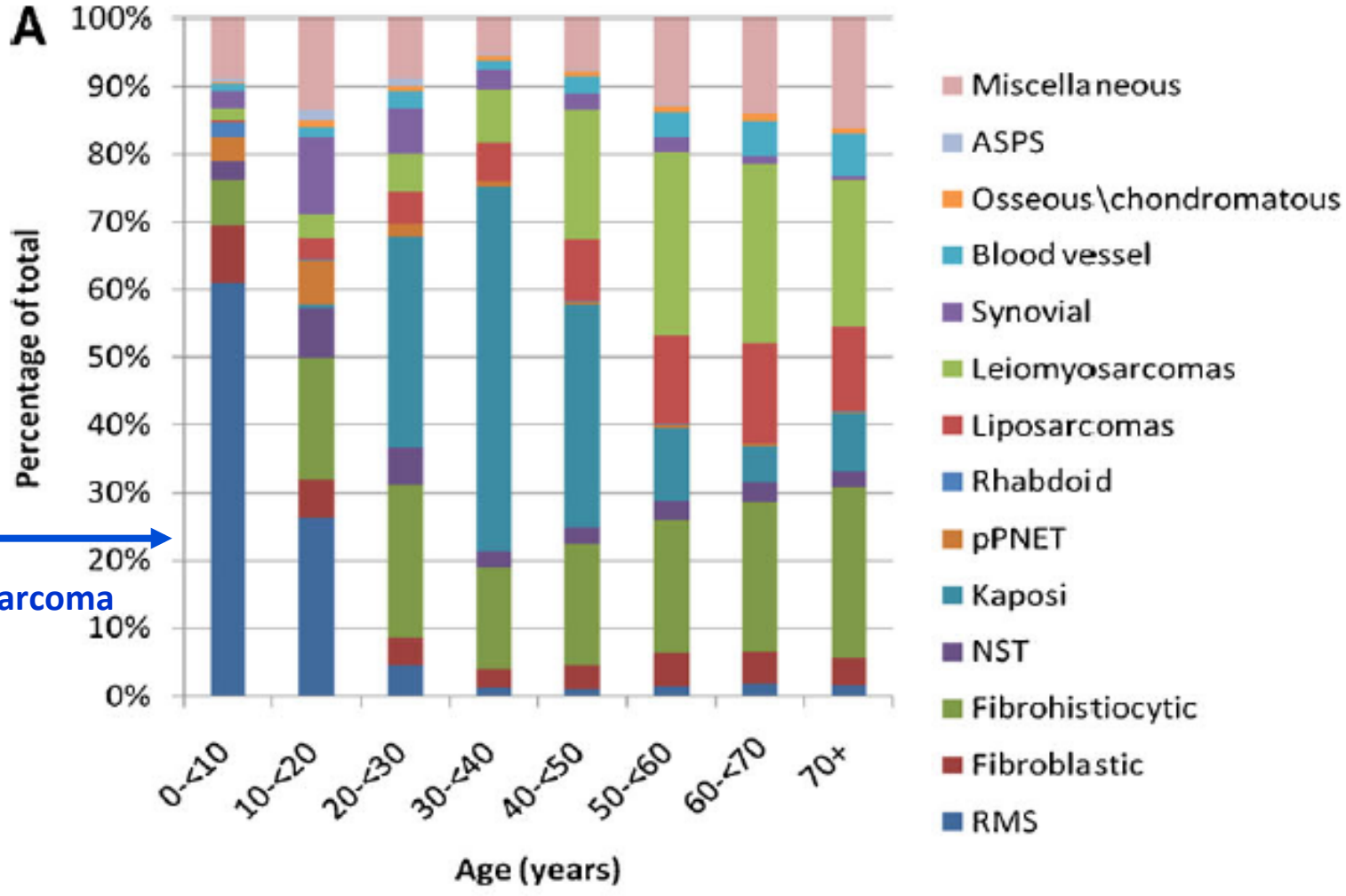
Alveolar-solid varient

Mixed alveolar/ embryonal

Pediatr Blood Cancer 2011;57:943–949

Soft Tissue Sarcoma Across the Age Spectrum: A Population-Based Study From the Surveillance Epidemiology and End Results Database

Andrea Ferrari, MD,[1] Iyad Sultan, MD,[2]* Tseng Tien Huang, PhD,[3] Carlos Rodriguez-Galindo, MD,[4] Ahmad Shehadeh, MD,[5] Cristina Meazza, MD,[1] Kirsten K. Ness, PhD,[3] Michela Casanova, MD,[1] and Sheri L. Spunt, MD[6,7]



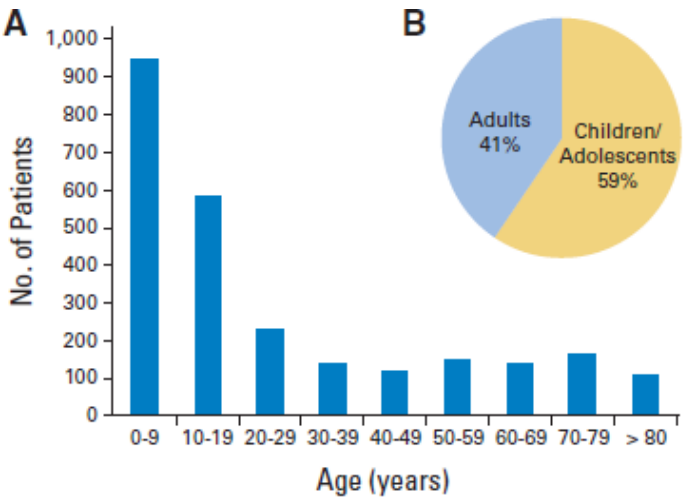
Rabdomiosarcoma

VOLUME 27 · NUMBER 20 · JULY 10 2009

JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

Comparing Adult and Pediatric Rhabdomyosarcoma in the Surveillance, Epidemiology and End Results Program, 1973 to 2005: An Analysis of 2,600 Patients



	Children/Adolescents		Adults (n = 1,071)	
Histology				
Embryonal	876	57.3	218	20.4
Alveolar	393	25.7	155	14.5
Pleomorphic	17	1.1	205	19.1
Spindle cell	15	1.0	11	1.0
Mixed type	26	1.7	18	1.7
NOS	202	13.2	464	43.3
Site category				
Favorable	599	39.2	288	26.9
Unfavorable	843	55.1	692	64.6
Unknown	87	5.7	91	8.5

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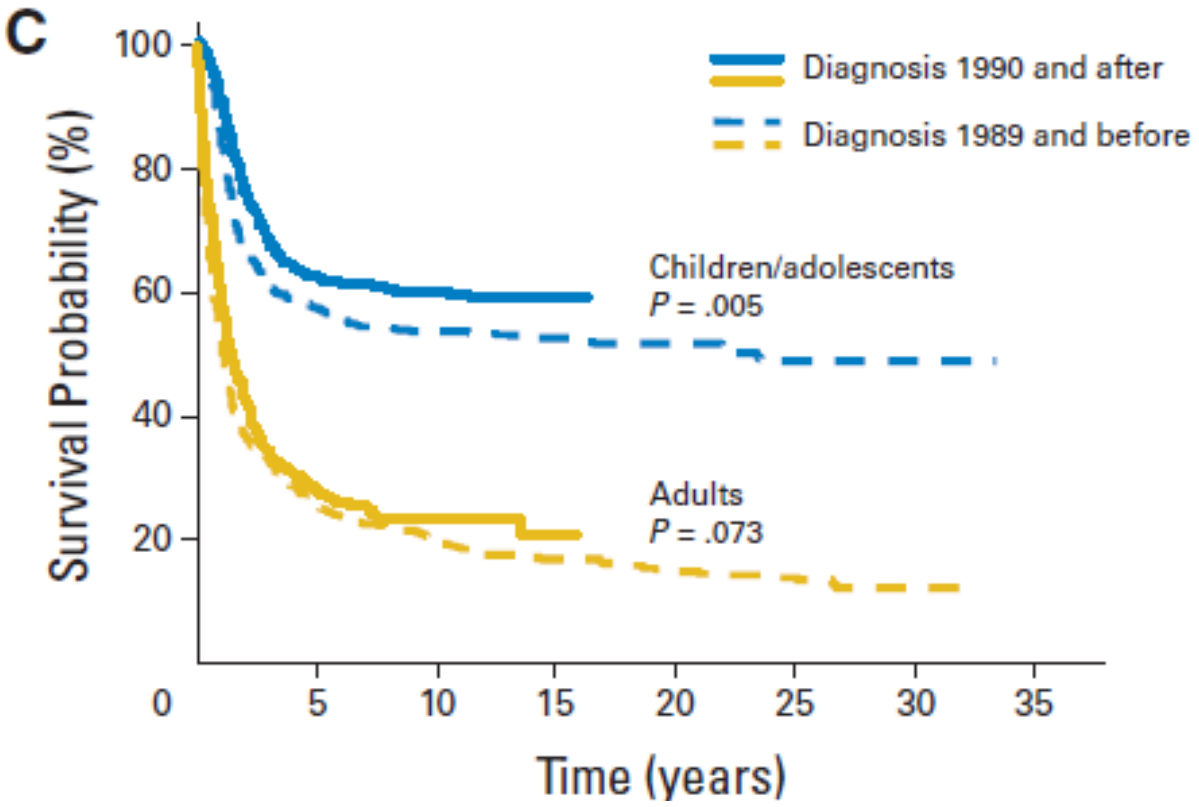

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	All Patients		
Variable	HR	95% CI	*P*
Age category			
Pediatric	1.0	Reference	
Young adult	1.94	1.62 to 2.32	< .001
Middle age	2.62	2.14 to 3.22	< .001
Aged	4.01	3.34 to 4.95	< .001
Geriatric	8.25	5.49 to 12.38	< .001
Local therapy*			
Yes	1.0	Reference	
No	1.87	1.60 to 2.18	< .001

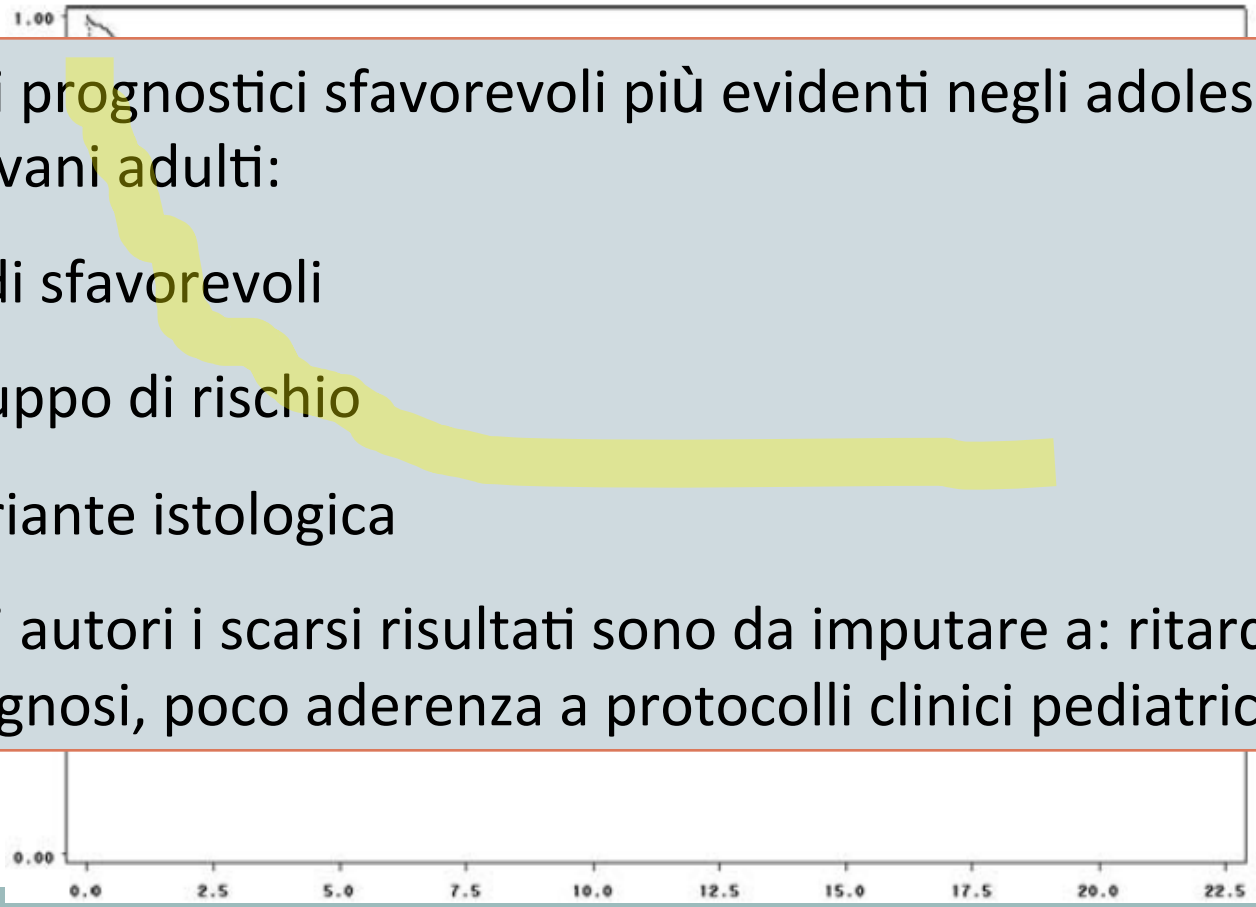
Hazard Ratio=H rate A/ H rate B Children/Adults

Original Article

Rhabdomyosarcoma in Adolescents

A Report From the AIEOP Soft Tissue Sarcoma Committee

Gianni Bisogno, MD, PhD[1]; Alessia Compostella, MD[1]; Andrea Ferrari, MD[2]; Guido Pastore, MD[3]; Giovanni Cecchetto, MD[4]; Alberto Garaventa, MD[5]; Paolo Indolfi, MD[6]; Luigi De Sio, MD[7]; and Modesto Carli, MD[1]



fattori prognostici sfavorevoli più evidenti negli adolescenti-giovani adulti:

1. Sedi sfavorevoli
2. Gruppo di rischio
3. Variante istologica

Per gli autori i scarsi risultati sono da imputare a: ritardo della diagnosi, poco aderenza a protocolli clinici pediatrici.

PROTOCOLLI APERTI

EpSSG RMS 2005

EpSSG NRMS 2005

European paediatric soft tissue sarcoma study group:

1. AIEOP
2. CWS
3. SIOP

Age ≤21 years

RMS 2005 886 arruolati
156 centri / 24 in Italia

NRMS 2005 551 arruolati
Sarcoma sinoviale il più rappresentato
Criticità: scarsa collaborazione con gli oncologi degli adulti,assenza di studi biologici, molto simile con altri studi americani

RABDOMIOSARCOMA DELL'ADULTO
Studio osservazionale prospettico

Coordinatori:
Rossella Bertulli
Oncologia Medica, Fondazione IRCCS Istituto Nazionale Tumori Milano
Andrea Ferrari

Oncologia Pediatrica, Fondazione IRCCS Istituto Nazionale Tumori Milano

Italian Sarcoma Group (ISG) e Rete Tumori Rari (RTR) propongono, in collaborazione con Associazione Italiana Ematologia Oncologia Pediatrica (AIEOP), uno studio osservazionale per il paziente adulto con rabdomiosarcoma embrionale e alveolare. Lo studio si prefigge la registrazione dei casi di età maggiore di 18 anni, indipendentemente dal trattamento seguito dal paziente, allo scopo di studiarne storia clinica e prognosi

Lo studio prevede una registrazione prospettica dei casi.

E' prevista la centralizzazione della revisione patologica presso l'Anatomia Patologica dell'Ospedale Civile di Treviso.

RABDOMIOSARCOMA DELL'ADULTO
Studio osservazionale prospettico

Coordinatori:
Rossella Bertulli
Oncologia Medica, Fondazione IRCCS Istituto Nazionale Tumori Milano
Andrea Ferrari
Oncologia Pediatrica, Fondazione IRCCS Istituto Nazionale Tumori Milano

1. Stadi azione utilizzata per il rabdomiosarcoma pediatrico
2. Stratificazione in gruppi di rischio dei pazienti affetti da rabdomiosarcoma non-metastatico in accordo allo studio European pediatric Soft Tissue Sarcoma Study Group (E*p*SSG RMS 2005)
3. Possibile schema terapeutico per i pazienti adulti con rabdomiosarcoma localizzato
4. Rabdomiosarcoma metastatico
5. Rabdomiosarcoma recidivato

Inizio reclutamento 11-2011

NEUROBLASTOMA

Neuroblastoma

Ganglioneuroblastoma

Ganglioneuroma

Neuroblastoma in Adults: Incidence and Survival Analysis Based on SEER Data†

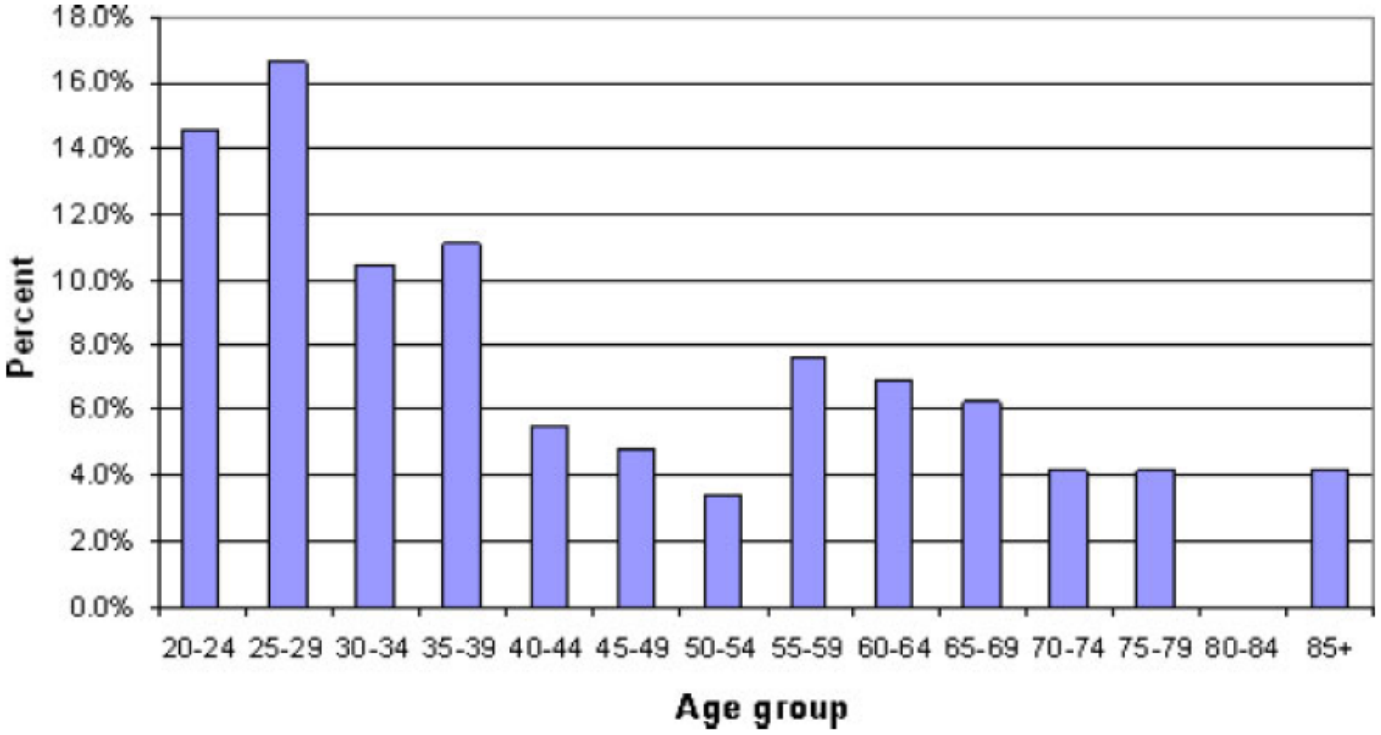


Fig. 1. Age distribution for adult patients diagnosed with NB between 1973 and 2001.

Pediatr Blood Cancer 2007;49:41–46

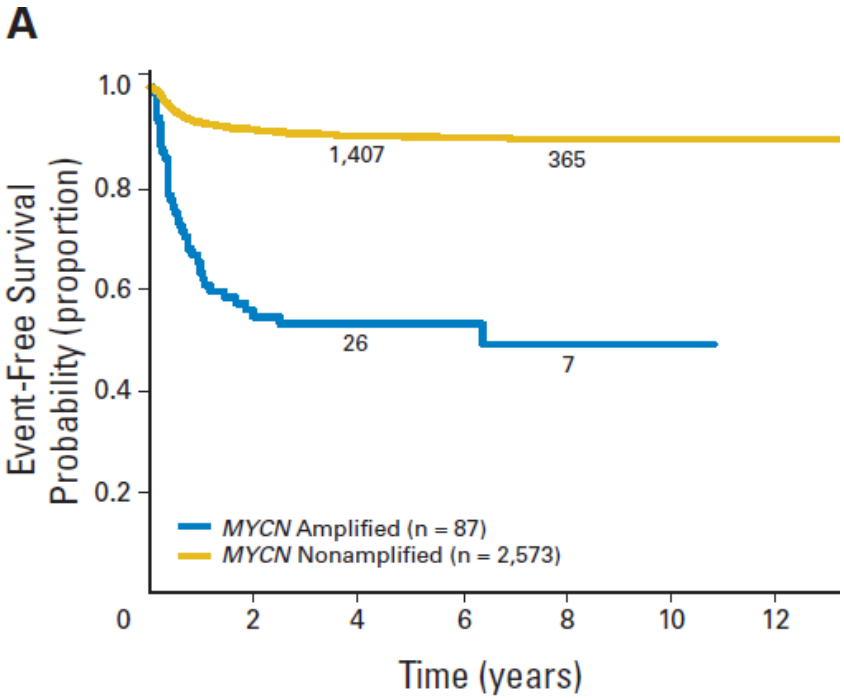
Neuroblastoma in Adults: Incidence and Survival Analysis Based on SEER Data†

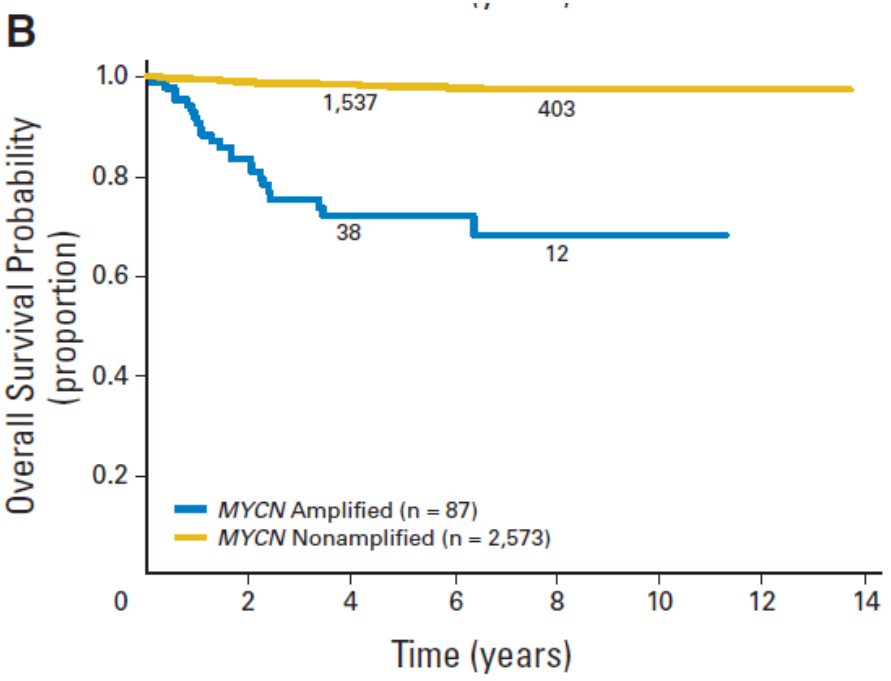
TABLE I. Comparison of Neuroblastoma Survival in Infants, Children, and Adults

Follow-up (years)	Infants (n = 700)		Children 1–9 years (n = 1,120)		Children 10–19 years (n = 90)		Adults (n = 125)	
	OS (%)	RS (%)	OS (%)	RS (%)	OS (%)	RS (%)	OS (%)	RS (%)
3	86.00	87.00	52.90	53.00	61.30	61.40	45.90	47.30
5	84.60	85.60	47.80	47.90	46.20	46.40	36.30	38.40

Pediatr Blood Cancer 2007;49:41–46

Significance of *MYCN* Amplification in International Neuroblastoma Staging System Stage 1 and 2 Neuroblastoma: A Report From the International Neuroblastoma Risk Group Database





VOLUME 27 · NUMBER 3 · JANUARY 20 2009

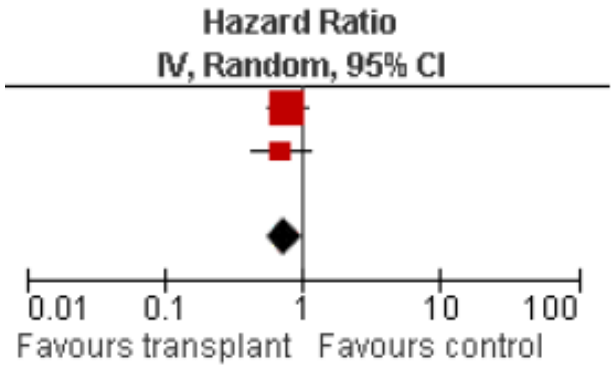
JOURNAL OF CLINICAL ONCOLOGY

High-dose chemotherapy and autologous haematopoietic stem cell rescue for children with high-risk neuroblastoma (Review)

Based on the currently available evidence, high-dose chemotherapy and autologous haematopoietic stem cell rescue seems to be a good treatment option for children with high-risk neuroblastoma, although possible higher levels of adverse effects should be kept in mind. This systematic review only allows a conclusion on the concept of myeloablative treatment; no conclusions regarding the best treatment strategy can be made.

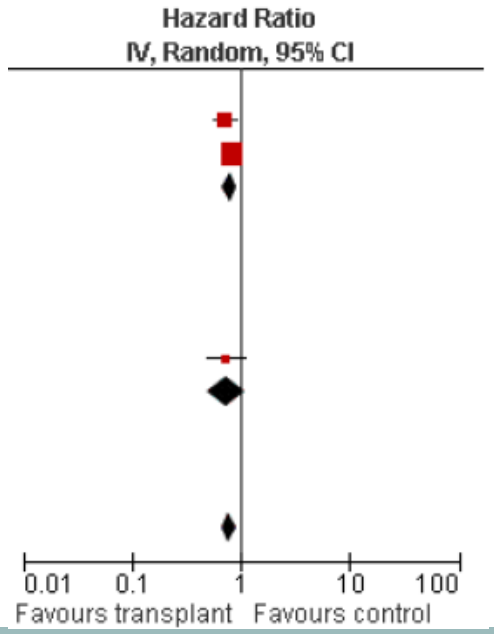
Transplant versus control, outcome: 1.2 Overall survival

HR=T/C 0.78



Transplant versus control, outcome: 1.1 Event-free survival.

HR=T/C 0.74



Neuroblastoma in Adults: Incidence and Survival Analysis Based on SEER Data†

TABLE IV. Review of Existing Reports of Adult Neuroblastoma

Authors (Year)	N	Ages (years)	DOD (months)	AWD (months)	NED (months)
Tang et al. (1975)	27	15–50	24 (nr)	3	nr
Dosik et al. (1978)	6	16–37	2 (2–17)	2 (11–18)	2 (8)
Lopez et al. (1980)	4	17–52	2 (3–16)	1 (23)	1 (35)
Grubb et al. (1984)	1	58	—	—	1 (48)
Aleshire et al. (1985)	8	26–75	4 (7–18)	1 (32)	3 (32–54)
Kaye et al. (1985)	3	20–38	1 (18)	2 (4–20)	—
Allan et al. (1986)	3	25–34	3 (20–69)	—	—
Prestidge et al. (1989)	5	18–34	3 (10–62)	2 (44–133)	—
Franks et al. (1997)	16	13–33	13 (2–258)	2 (23–130)	—
Kushner et al. (2003)	30	12–41	13 (7–65)	6 (11–130)	7 (9–181)
Total	103	12–75	65 (2–258)	19 (4–133)	14 (8–181)

DOD, Died of disease; AWD, Alive with disease; NED, Not evidence of disease.

Memorial Sloan-Kettering Experience with high-dose chemotharapy

Pediatr Blood Cancer 2007;49:41–46

NEUROBLASTOMA

Incidenza0.2-0.3 /milione/ anno

Stadio International Neuroblastoma Staging System(INSS): avanzato

Grado isto-patologico secondo i criteri di Shamada System : sfavorevole(indice mitotico,grado di differenziazione,età,stroma)

MYCN amplificato :raro

Delezione 1p-1q : ----------

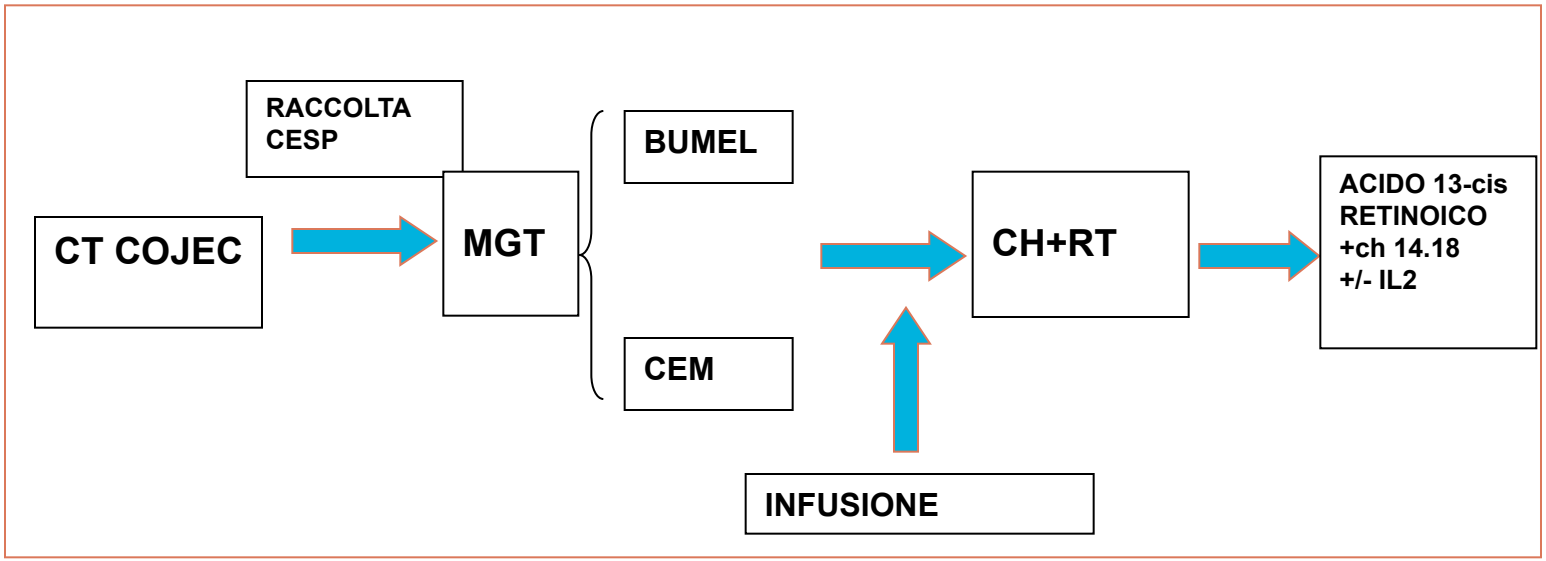
Dosaggio delle catecolamine urinarie: basso

Dosaggio delle LDH: basso

Andamento clinico: indolente

SIOP Europa Neuroblastoma (SIOPEN) Protocollo NB-AR-01 Primo studio cooperativo europeo per il neuroblastoma ad alto rischio

NB-AR-01 è il primo studio del Gruppo SIOP Europe Neuroblastoma finalizzato al trattamento del neuroblastoma ad alto rischio. Esso include: a) una chemioterapia d'induzione "accelerata" (schema COJEC), b) la raccolta di CESP, c) l'asportazione del tumore primitivo, d) un ciclo di MGT (BUMEL o CEM), seguito da infusione di CESP, e) l'irradiazione della sede del tumore primitivo, f) terapia differenziativa (acido 13-*cis*-retinoico)+ch 14.18 ± IL-2.



PROTOCOLLI APERTI

SIOP EUROPA NEUROBLASTOMA (SIOPEN)
Protocollo NB-AR-01 Primo studio cooperativo europeo per il neuroblastoma ad alto rischio

LNESG2 STUDY:
GUIDELINES FOR THE TREATMENT OF PATIENTS WITH LOCALIZED RESECTABLE NEUROBLASTOMA AND ANALYSIS OF PROGNOSTIC FACTORS

SARCOMA DI EWING

It is recognized that ES is part of a family called the ***Ewing's sarcoma family of tumors (ESFT****), which also includes* ***peripheral primitive neuroectodermal tumor (PNET), extraosseous Ewing's sarcoma (EES),***
and ***Askin's tumor (ES of the chest wall).*** *These tumors characterized by the presence of undifferentiated small round cells with scant cytoplasm at histology. Up to 95% of affected patients have a characteristic t(11;22)(q24;q12) or t(21;22) (q22;q12) chromosomal translocation.*

Dati AIEOP dal 1982 al 2010

Tumori ossei N.1568	N.pazienti	%
Sarcoma di Ewing	815	52
Osteosarcoma	635	40.5
PNET osseo	51	3.3
Tumore di Aski	34	2.2
Tumori Maligni ossei	19	1.9
Tumori ossei	14	0.9

How to Treat the Ewing's Family of Sarcomas in Adult Patients

Study	No. of patients (localized)	Overall
Sinkovics et al. [18]	34 (19)	DFS (27 mos), 50%
Siegel et al. [19]	16 (8)	Median OS, 34 mos; median DFS, 10 mos
Baldini et al. [20]	37 (26)	5-yr OS, 37%
Klaassen et al. [21]	30 (25)	3-yr OS, 23%
Fizazi et al. [26]	182 (129)	5-yr OS, 41%; 5-yr PFS, 32%
Martin et al. [22]	59 (46)	5-yr OS, 60%
Verrill et al. [23]	59 (42)	5-yr OS, 38%; 5-yr PFS, 27%
Bacci et al. [24]	23 (23)	5-yr OS, 59%; 5-yr PFS, 53%
Argon et al. [25]	25 (20)[b]	2-yr OS, 32.7%; 2-yr PFS, 19%

→ Age ≥26 yrs significant ($p = .05$)

The Oncologist 2006;11:65–72

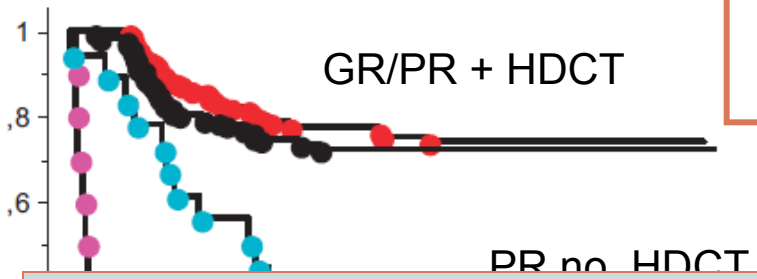
How to Treat the Ewing's Family of Sarcomas in Adult Patients

Type of treating institution	5-Year event-free survival		*p* value
	≤15 yrs	>15 yrs	
Overall	0.5	0.35	.0001
Pediatric Institution	0.51	0.43	.091
Other Institution	0.29	0.29	.0003

The Oncologist 2006;11:65–72

Nonmetastatic Ewing family tumors: high-dose chemotherapy with stem cell rescue in poor responder patients. Results of the Italian Sarcoma Group/ Scandinavian Sarcoma Group III protocol

	GR (%)	PR (%)	*P* value
Gender			0.04
Male	85 (44)	107 (56)	
Female	61 (56)	47 (44)	
Age (years)			<0.001
3–9	36 (71)	15 (29)	
10–17	74 (54)	62 (45)	
≥18	36 (32)	77 (68)	
Site			0.05
Extremity	86 (54)	73 (46)	
Central	60 (43)	81 (57)	



Incerto valore del fattore età
I diversi risultati possono essere dovuti :
Maggiore volume
Siti anatomici sfavorevoli
Scarsa aderenza a protocolli clinici

Figure 3. Event-free survival according to response to primary chemotherapy and to high-dose chemotherapy.

Annals of Oncology 22: 1221–1227, 2011

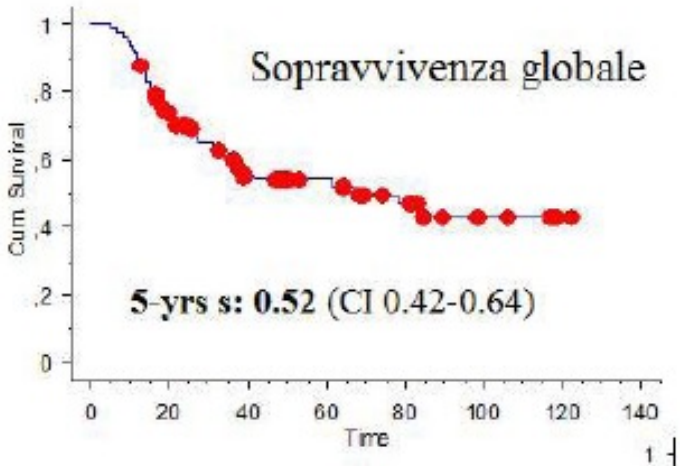
Italian Sarcoma Group
Bologna, Italy

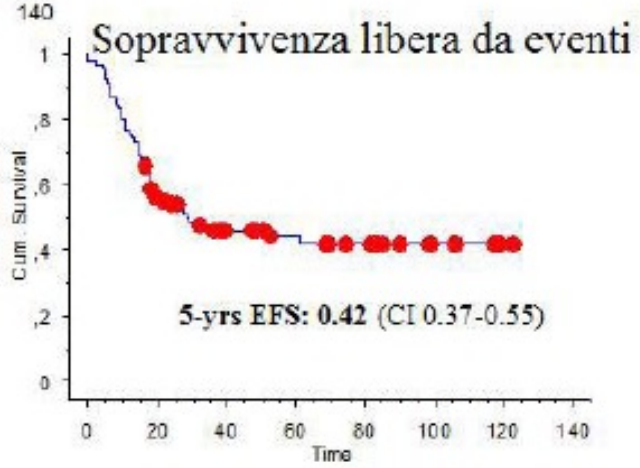
Scandinavian Sarcoma Group and
Oncologic Center, Lund, Sweden

ISG/SSG IV

An Italian – Scandinavian treatment protocol for high-risk Ewing´s family tumors

Date of activation June 1, 1999





By Dott.R.Lucksch

PROTOCOLLI APERTI -AIEOP

Studio di fase III sull' efficacia dell' intensificazione della dose in pazienti con sarcoma di Ewing non metastatico (ISG/AIEOP EW-1)

Protocollo per sarcoma di Ewing "ad alto rischio"

ISG/AIEOP EW-2

alto rischio = M+ polmoni/pleura o M+ scheletrica unica

Very high risk Ewing Family Tumors

Studio AIEOP/ISG VHR-01
Studio AIEOP/ISG VHR-02

Altissimo rischio: M+ extrapolmonari

Età di arruolamento ≤ 40 aa

Protocolli Osteosarcoma

- "Randomized prospective study for the treatment of non-metastatic ost
- "P
- "Studio clinico osservazionale per il trattamento dell'osteosarcoma non metastatico delle estremità"
- Chemioterapia+immunoterapia per osteosarcoma metastatico all'esordio *(INT e G. Pini, MI)*
- "Osteosarcoma ad alto grado di malignità con ricaduta ad altissimo rischio" *(OIRM S. Anna, TO)*

In via di attivazione ISG/OS2 con studio per il P-glycoprotein (Pgp) fenotipo del gene MDR1 come fattore predittivo alla chemioresistenza. Saranno inclusi sarcomi ossei delle estremità. Centro coordinatore Bologna Istituto Rizzoli

tre chiuso all'

TUMORE DI WILMS

Il TW nel 75% dei casi insorge prima dei 5 anni d'età, con un'incidenza annua di 7 casi/milione. Nel 5% dei bambini può essere bilaterale.
Malformazioni congenite isolate (quali emipertrofia, aniridia, anomalie genito-urinarie) o raggruppabili in sindromi definite (Beckwith-Wiedeman, Denys-Drash, WAGR) possono associarsi al nefroblastoma.
Mutazioni del gene oncosoppressore WT1, situato sul braccio corto del cromosoma 11 (11p13), sono presenti nel 10% dei casi testati.
Incidenza negli adulti nel 0.3/milione

Original Article

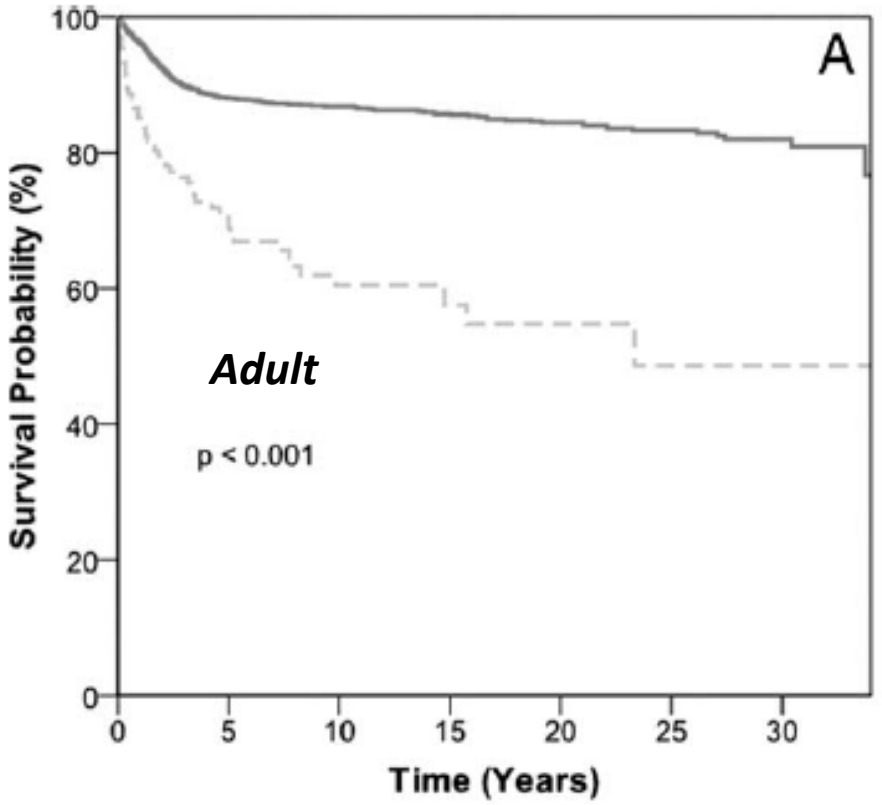
A Surveillance, Epidemiology and End Results (SEER) Program Comparison of Adult and Pediatric Wilms' Tumor

SEER data base 1973-2007 2342 pts 2190 pediatric 152 adult

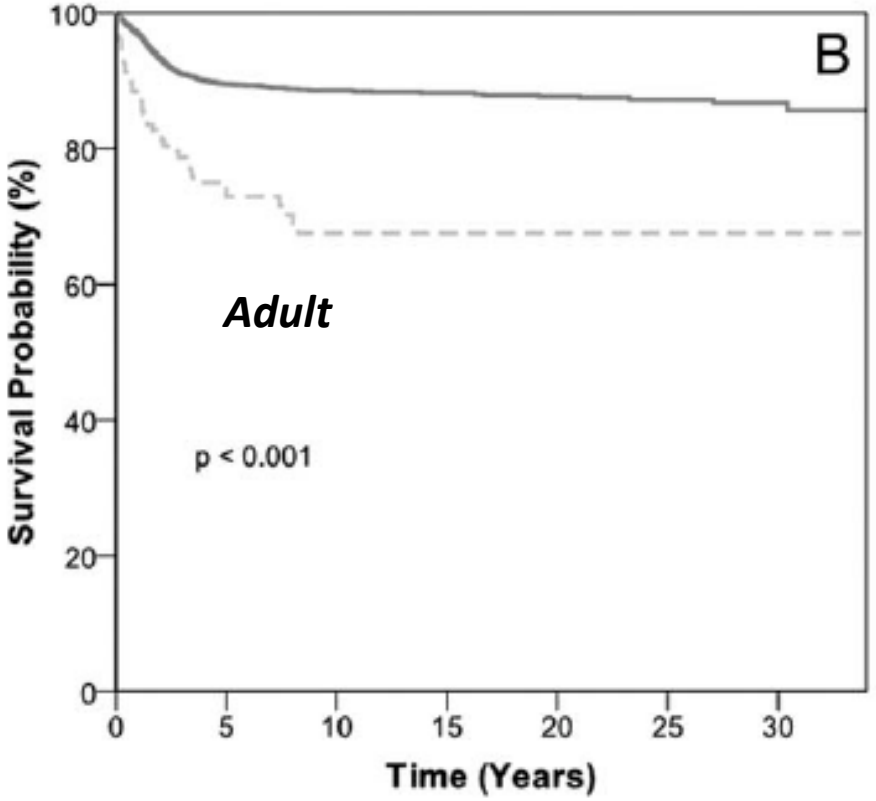
	Pediatric group(2190) %	Adult group(152) %
M+	23.3	15.8
Stage regional	28.4	13.2
Stage localized	44.7	62.5
Radiation treatment	44.4	24.3
No lymph node samplyng	16.2	57.9

A Surveillance, Epidemiology and End Results (SEER) Program Comparison of Adult and Pediatric Wilms' Tumor

OS



DFS

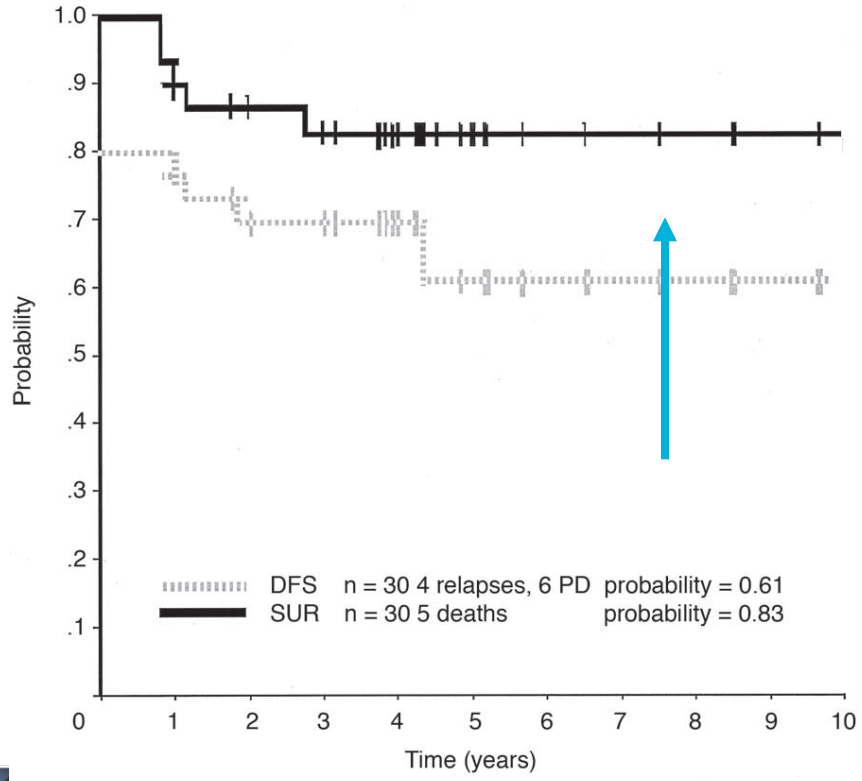


VOLUME 22 · NUMBER 22 · NOVEMBER 15 2004
JOURNAL OF CLINICAL ONCOLOGY ORIGINAL REPORT

Wilms' Tumor in Adults: Results of the Society of Pediatric Oncology (SIOP) 93-01/Society for Pediatric Oncology and Hematology (GPOH) Study

Harald Reinhard, Schahin Aliani, Christian Ruebe, Michael Stöckle, Ivo Leuschner, and Norbert Graf

SIOP 93-01 protocol / Pediatric Oncology And Hemalogy study 30 adult patients



PROTOCOLLI APERTI

TUMORE DI WILMS AIEOP 2003
PROTOCOLLO DIAGNOSTICO TERAPEUTICO

Età di arruolamento ≤ 18 aa

CHIRURGIA

TW STADIO I → **NO CT+RT**

TW STADIO I, ± ANAPLASIA DIFFUSA

TW STADIO II, SENZA ANAPLASIA DIFFUSA

TW STADIO III, SENZA ANAPLASIA DIFFUSA

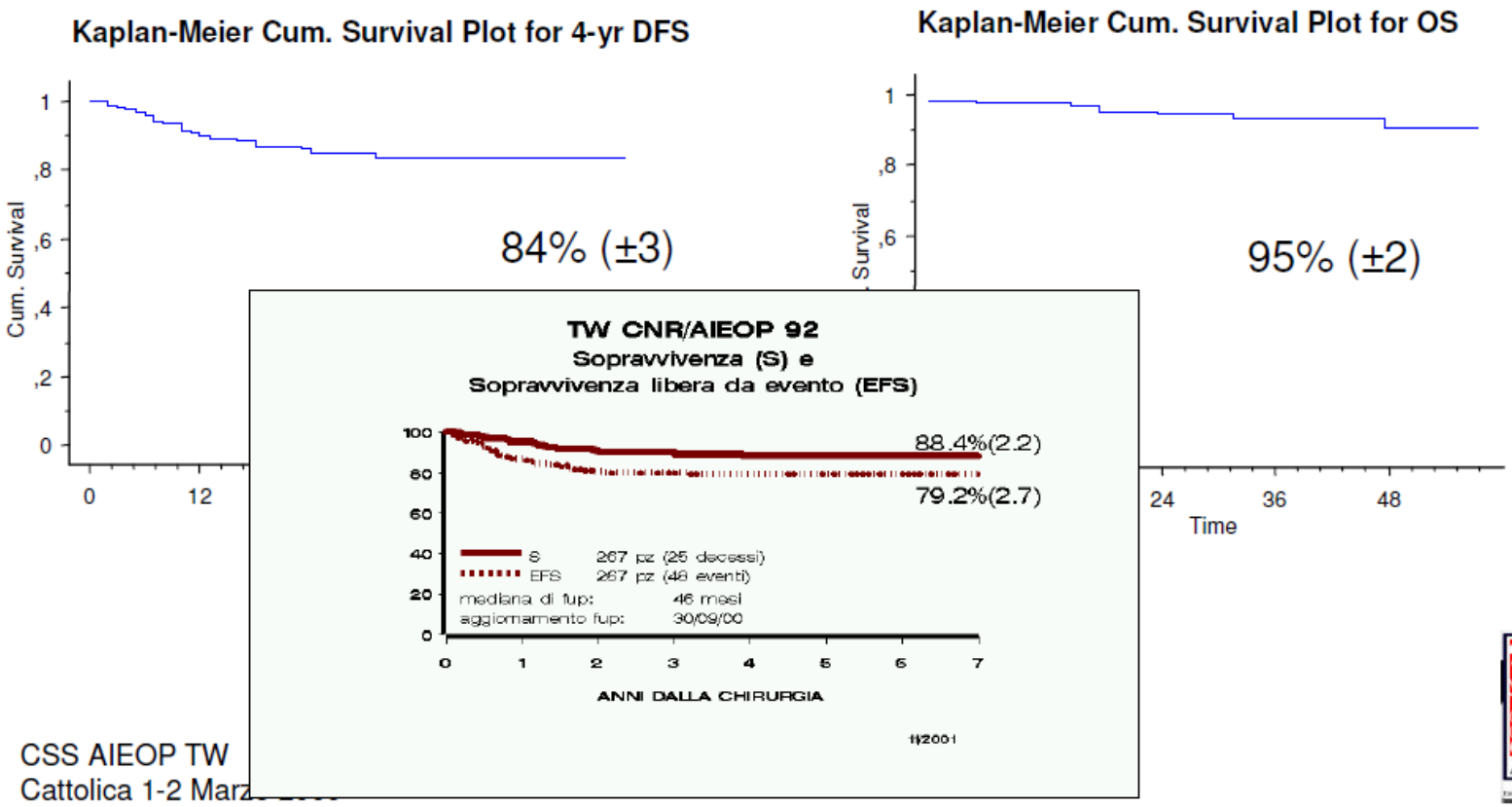
TW STADIO II-III CON ANAPLASIA DIFFUSA

TW STADIO IV

→ **CT +/-RT**

TW STADIO V → **NO CH solo CT+RT**

all WT (233 cases)
(anaplastic t included)



CSS AIEOP TW
Cattolica 1-2 Marz

By Dott.Spreafico

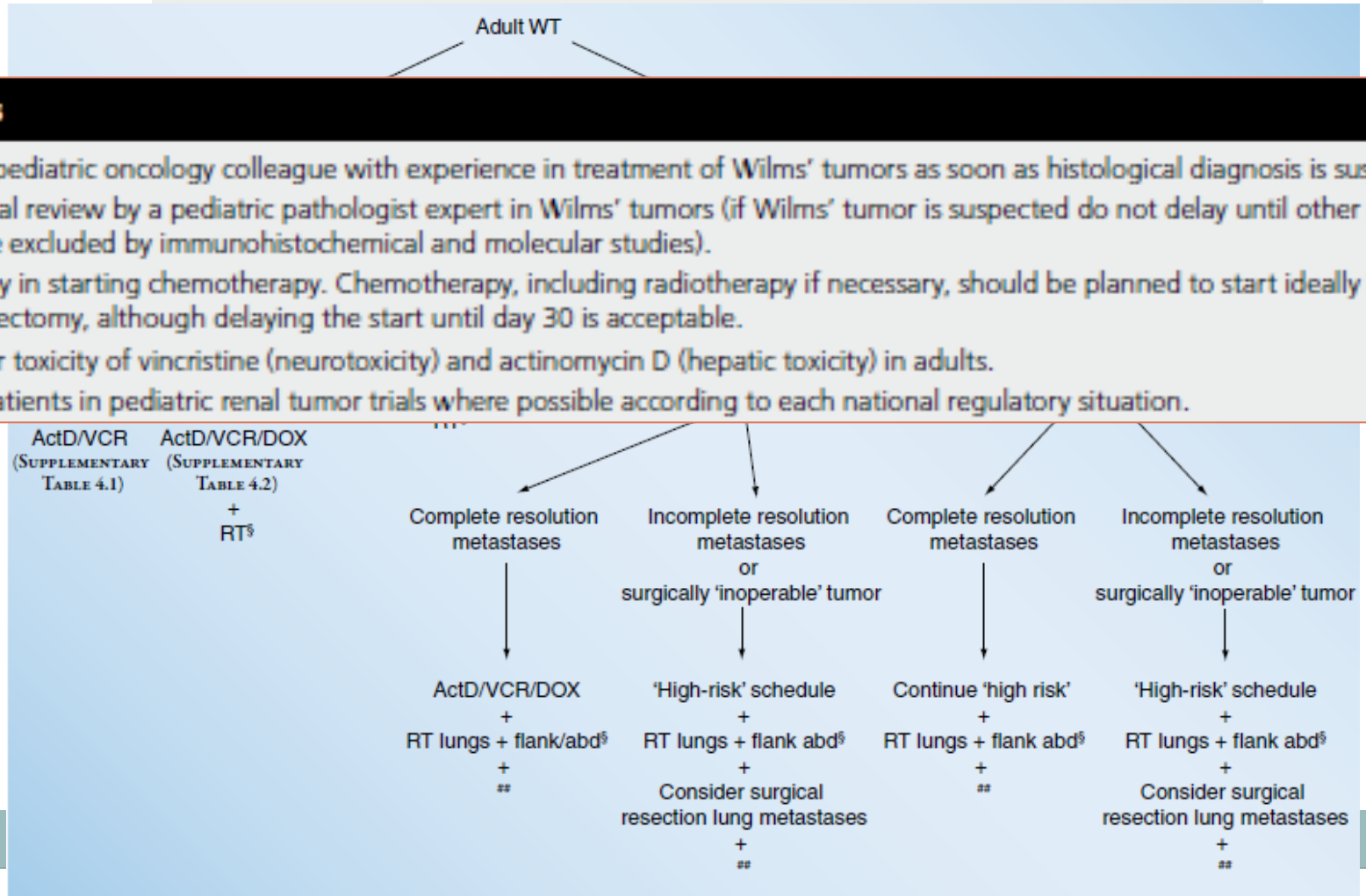
EXPERT REVIEWS

Management of adults with Wilms' tumor: recommendations based on international consensus

Expert Rev. Anticancer Ther. 11(7), 1105–1113 (2011)

Key issues

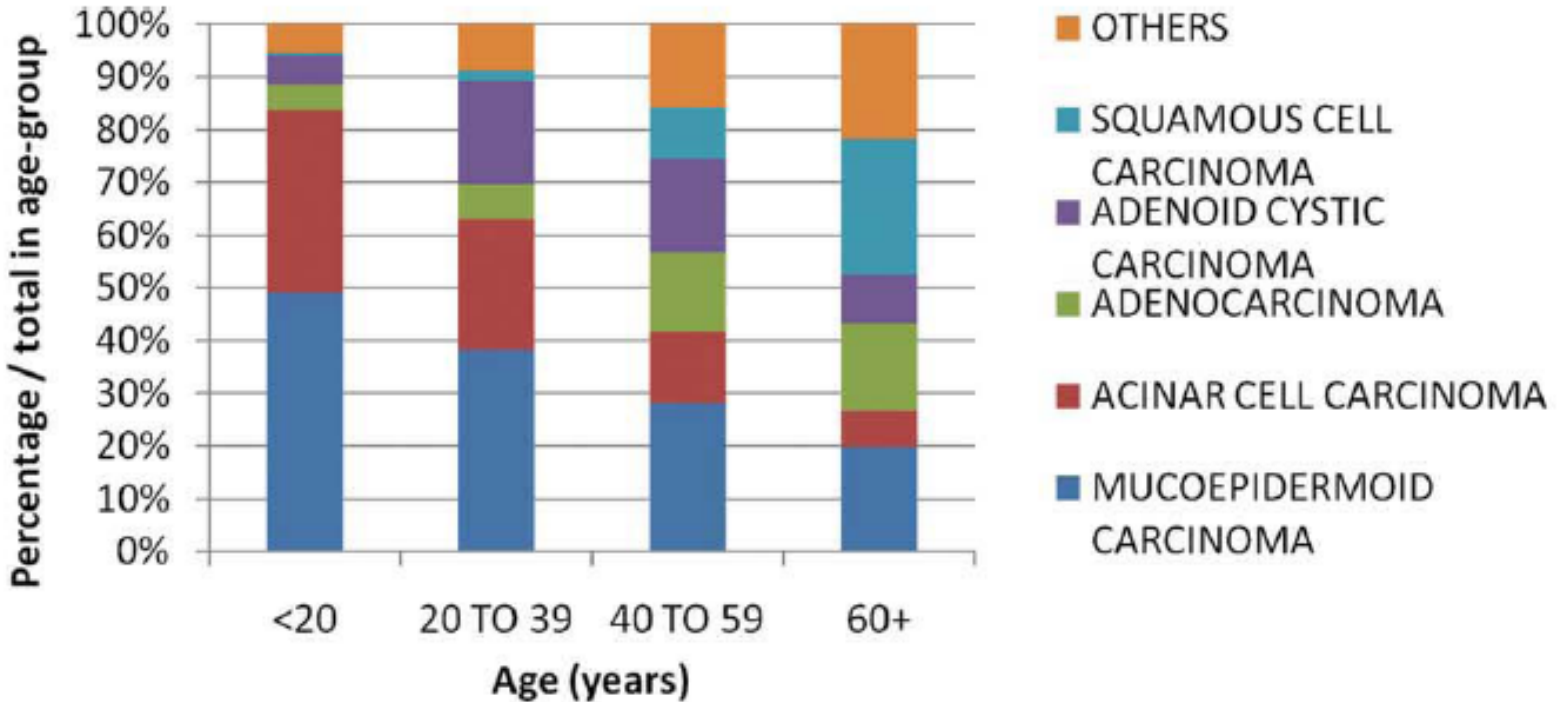
- Consult a pediatric oncology colleague with experience in treatment of Wilms' tumors as soon as histological diagnosis is suspected.
- Pathological review by a pediatric pathologist expert in Wilms' tumors (if Wilms' tumor is suspected do not delay until other renal tumors are excluded by immunohistochemical and molecular studies).
- Avoid delay in starting chemotherapy. Chemotherapy, including radiotherapy if necessary, should be planned to start ideally by day 14 postnephrectomy, although delaying the start until day 30 is acceptable.
- Be alert for toxicity of vincristine (neurotoxicity) and actinomycin D (hepatic toxicity) in adults.
- Register patients in pediatric renal tumor trials where possible according to each national regulatory situation.



SALIVARY GLAND CARCINOMAS IN CHILDREN AND ADOLESCENTS: A POPULATION-BASED STUDY, WITH COMPARISON TO ADULT CASES

Iyad Sultan, MD,[1] Carlos Rodriguez–Galindo, MD,[2] Sereen Al-Sharabati, DO,[3] Marco Guzzo, MD,[4] Michela Casanova, MD,[5] Andrea Ferrari, MD[5]

A



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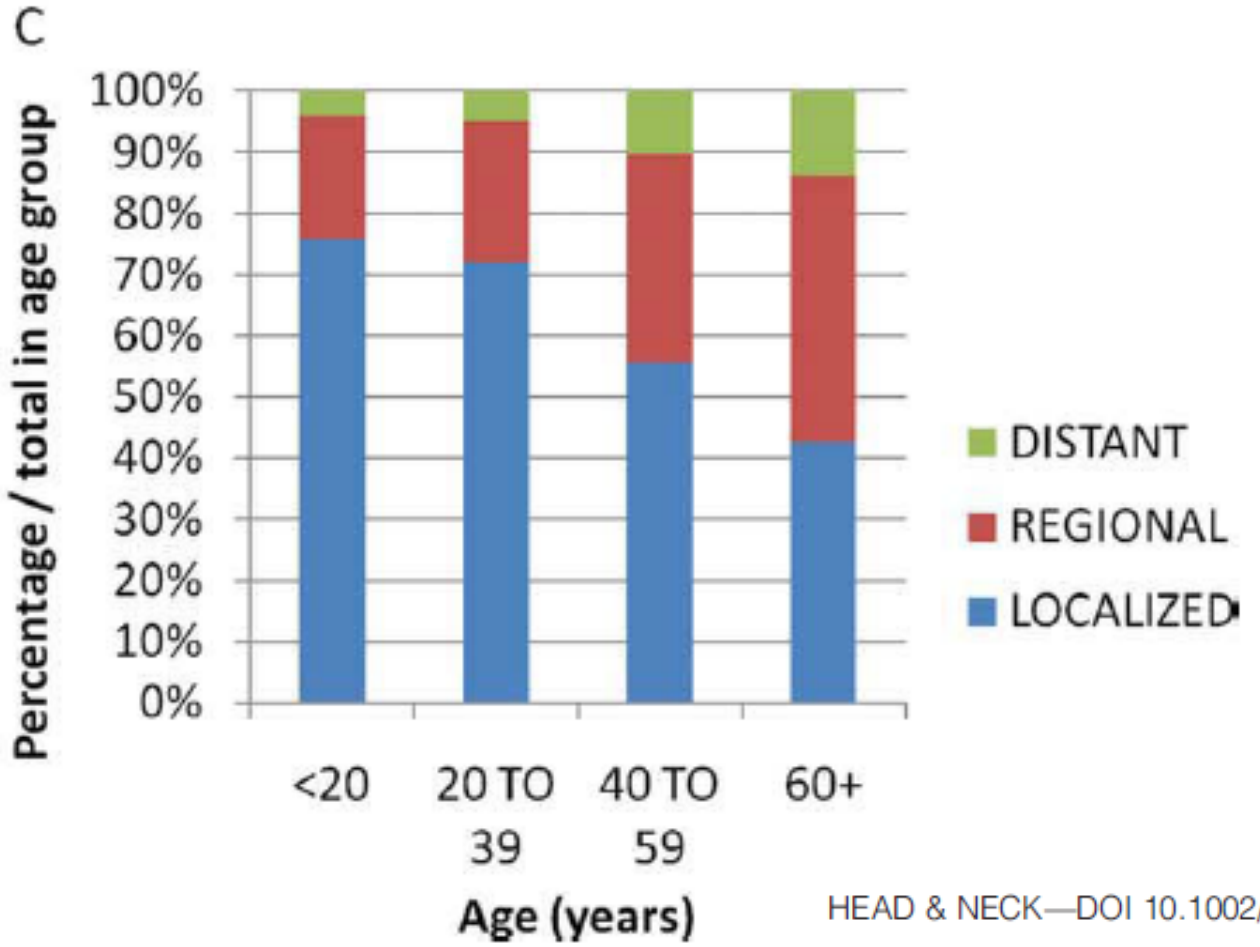

SALIVARY GLAND CARCINOMAS IN CHILDREN AND ADOLESCENTS: A POPULATION-BASED STUDY, WITH COMPARISON TO ADULT CASES

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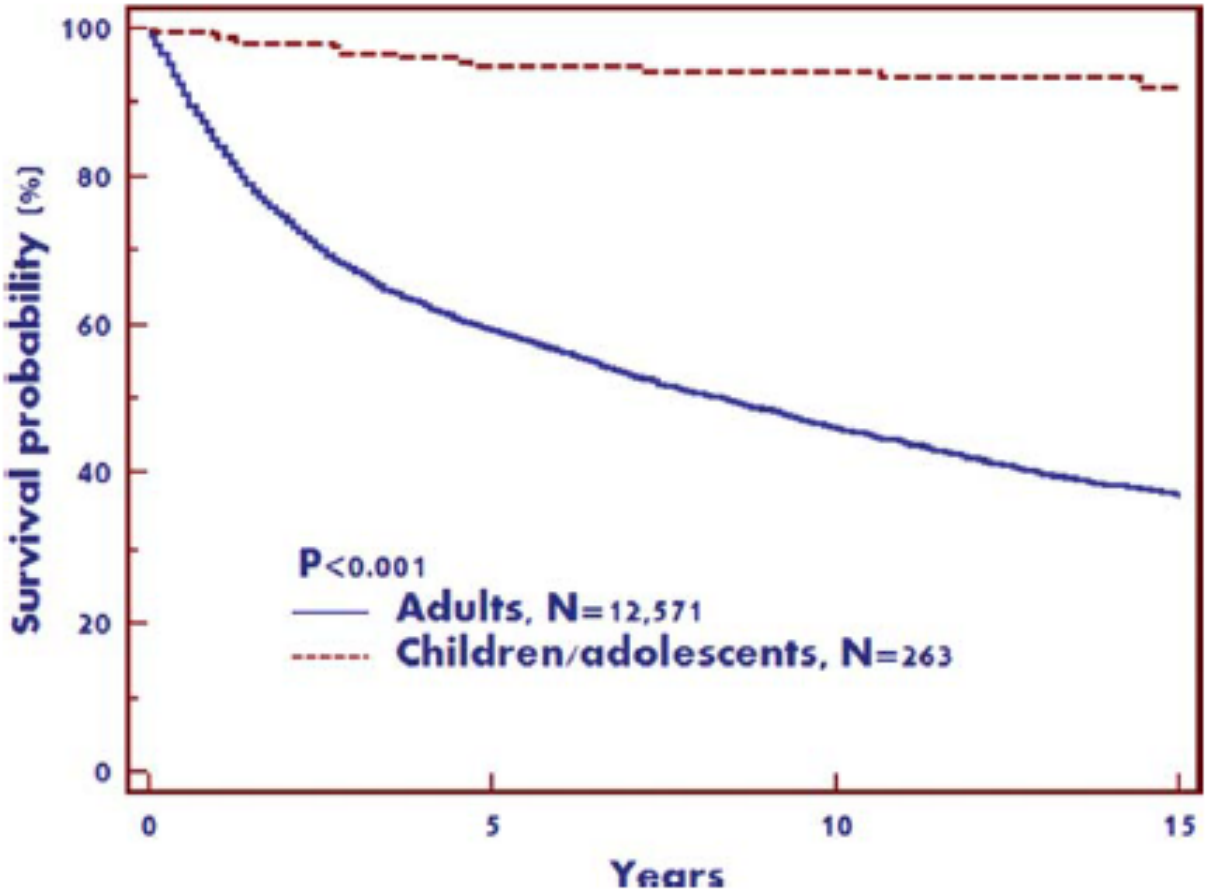


Survival of adolescents treated with MRC ALL97 paediatric trial or UKALLXII/E2993 adult trial

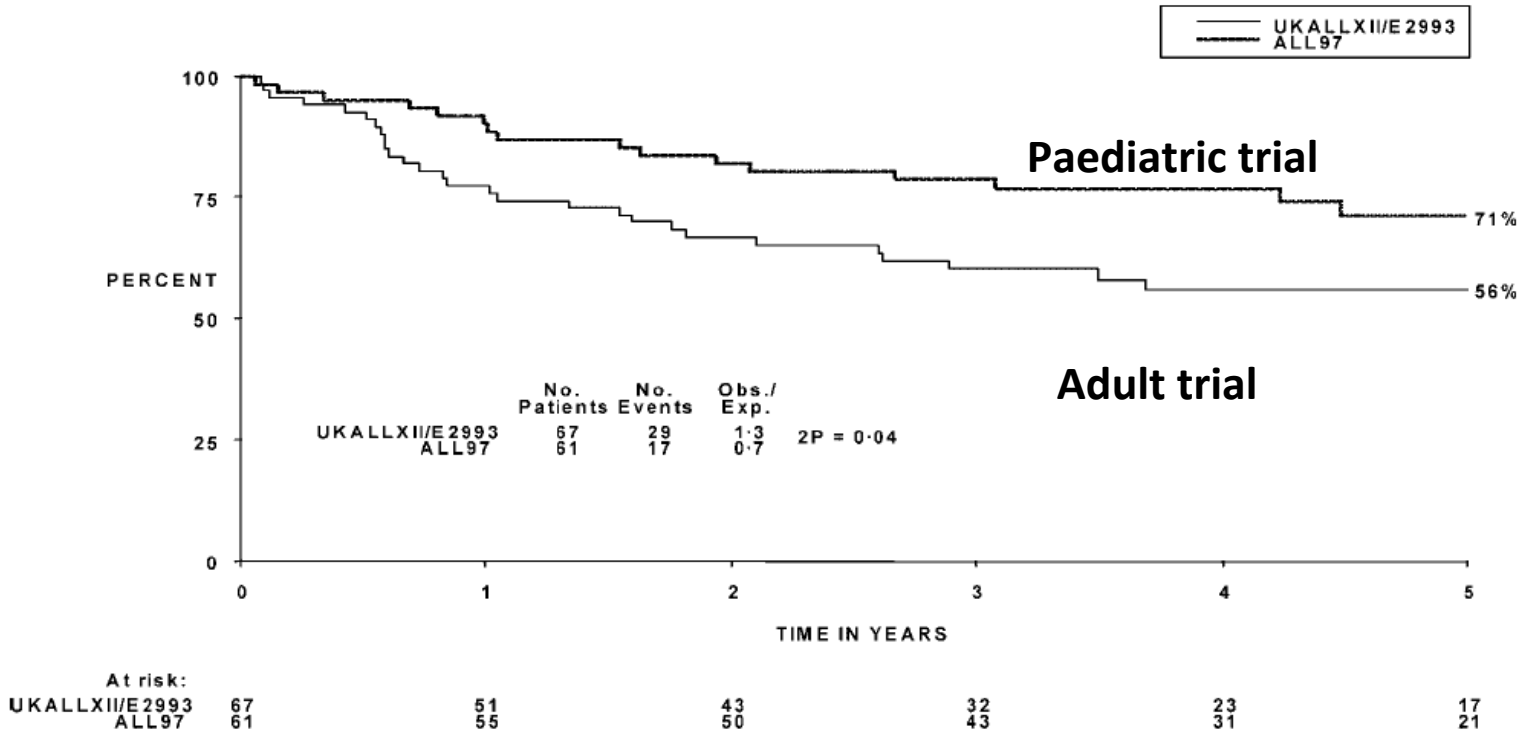


Fig. 1. Overall survival of patients aged 15, 16 and 17 years in the UKALL trials; Abbreviations used: Obs, observed, Exp, expected.

Pediatr Blood Cancer 2007;48:254–261

The higher survival of adolescents treated on paediatric trials could be due to many factors, including

- differing protocol design
- drugs administered
- use of HSCT
- compliance with treatment
- supportive care

At diagnosis adolescents should be referred to research treatment teams, with experience in the management of paediatric ALL, and should be enrolled on international collaboration studies.

Giorgio Dini
Director
Department of Paediatric Haematology and Oncology
G. Gaslini Institute, Genova

Diversa biologia

Diversa suddivisione in fasce di rischio

Non aderenza a protocolli clinici dedicati

Scarsa competenza per la specificità della neoplasia

Scarsa casistica

	O	E
Leukaemia	344	1682
Acute lymphocytic leukaemia	215	940
Acute non-lymphocytic leukaemia	107	501
Lymphoma and reticuloendothelial neoplasms	520	5533
Hodgkin lymphoma	361	4043
Non-Hodgkin lymphoma	152	1125
CNS tumours	178	1230
Ependymoma		
Astrocytoma	67	470
Primitive neuroectodermal tumours	64	155
SNS tumours	22	136
Neuroblastoma and ganglioneuroblastoma	21	49
Retinoblastoma	2	–
Renal tumours	10	68
Hepatic tumours	11	49
Malignant bone tumours	275	989
Osteosarcoma	114	402
Ewing sarcoma	158	365
Soft-tissue sarcomas	217	866
Rhabdomyosarcoma and embryonal sarcoma	93	278
Fibrosarcoma, neurofibrosarcoma and other fibromatous neoplasms	10	297
Other specified soft-tissue sarcomas	74	192
Germ cell, trophoblastic and other gonadal neoplasms	75	1997
Gonadal germ cell tumours	27	1546
Carcinomas and other malignant epithelial neoplasms	54	3641
Thyroid carcinoma	13	1144
Melanoma	6	1057
Other and unspecified malignant tumours	16	501
Total	1745	16,711

Adolescents with cancer in Italy: Entry into the national cooperative paediatric oncology group AIEOP trials

Andrea Ferrari[a,k], Elisa Dama[b], Andrea Pession[c], Roberto Rondelli[c], Cristiana Pascucci[d], Franco Locatelli[e], Stefano Ferrari[f], Maurizio Mascarin[g], Franco Merletti[b], Giuseppe Masera[h], Maurizio Aricò[i], Guido Pastore[b,j,k,]*

Number of adolescents with cancer (15-19) diagnosed between 1989 and 2006 and registered in the AIEOP Model 1.01 database versus number of cases in Italy (AIRTUM)

EUROPEAN JOURNAL OF CANCER 45 (2009) 328–334

Adolescents with cancer in Italy: Entry into the national cooperative paediatric oncology group AIEOP trials

Andrea Ferrari[a,k], Elisa Dama[b], Andrea Pession[c], Roberto Rondelli[c], Cristiana Pascucci[d], Franco Locatelli[e], Stefano Ferrari[f], Maurizio Mascarin[g], Franco Merletti[b], Giuseppe Masera[h], Maurizio Arico[i], Guido Pastore[b,j,k,*]

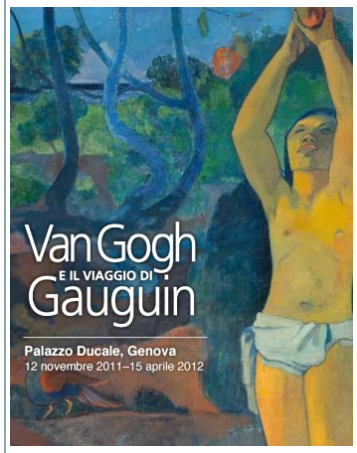
Age at diagnosis	A		
	0–14	15–19	P*
Leukaemia	84.0	15.2	01
Acute lymphocytic leukaemia	92.2	20.1	<0.001
Acute non-lymphocytic leukaemia	64.2	14.3	<0.001
Lymphoma and reticuloendothelial neoplasms	48.2	4.9	<0.001
Hodgkin lymphoma	53.7	5.0	<0.001
Non-Hodgkin lymphoma	77.2	6.8	<0.001
CNS tumours	18.7	4.2	<0.001
Ependymoma	34.3	8.2	0.026
Astrocytoma	17.4	4.2	0.005
Primitive neuroectodermal tumours	33.2	16.0	0.005
SNS tumours	69.8	6.5	<0.001
Neuroblastoma and ganglioneuroblastoma	72.3	18.4	<0.001
Retinoblastoma	59.9	–	–
Renal tumours	47.3	3.0	0.005
Hepatic tumours	58.3	14.0	0.004
Malignant bone tumours	43.4	16.9	<0.001
Osteosarcoma	34.6	13.3	<0.001
Ewing sarcoma			).001
Soft-tissue sarcomas	68.4	15.7	).001
Rhabdomyosarcoma and embryonal sarcoma	88.6	23.1	<0.001
Fibrosarcoma, neurofibrosarcoma and other fibromatous neoplasms	26.2	1.2	0.076
Other specified soft-tissue sarcomas	64.2	27.9	<0.001
Germ cell, trophoblastic and other gonadal neoplasms	34.0	1.3	<0.001
Gonadal germ cell tumours	40.0	0.4	<0.001
Carcinomas and other malignant epithelial neoplasms	2.9	0.2	0.242
Thyroid carcinoma	1.4	0.0	0.668
Melanoma	1.1	0.2	0.836
Other and unspecified malignant tumours	1.9	0.4	0.667
Total	53.0		

Percentages of cases enrolled in AIEOP clinical trials

EUROPEAN JOURNAL OF CANCER 45 (2009) 328–334

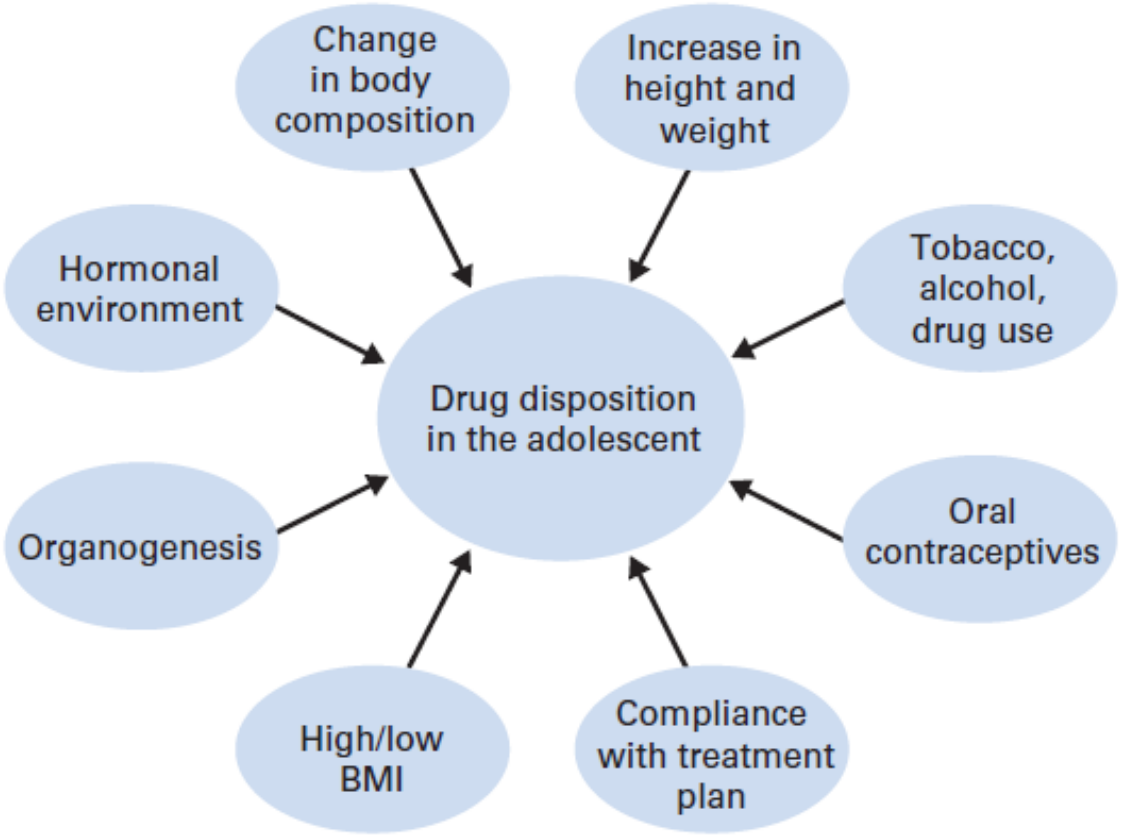
National Cancer Institute
at the National Institutes of Health

Clinical trials are an important treatment option for cancer patients of all ages since they provide the most up-to-date treatments. Currently, only about 2 percent of patients 20 to 39 years old are treated in clinical trials, compared with more than 60 percent of children under the age of 15. Survival rates for pediatric cancer have increased dramatically in the last few decades. Participation of more adolescents and young adults in clinical trials will help improve treatment, survival, and understanding of the types of cancers that occur in patients in this age group



Grazie dell’attenzione

Problematiche della diversa risposta clinica nei giovani adulti
in tutti i tipi di tumori



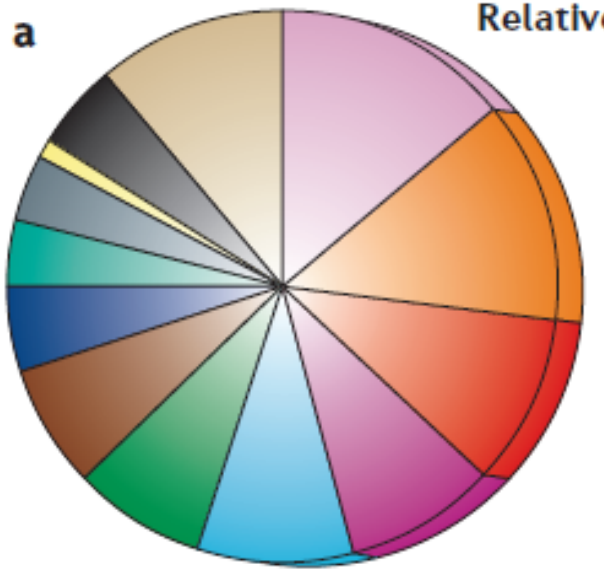
J Clin Oncol 28:4790-4799. © 2010

SEER
Surveillance, Epidemiology, and End Results Program

The distinctive biology of cancer in adolescents and young adults

Archie Bleyer[*‡], *Ronald Barr*[§], *Brandon Hayes-Lattin*[||], *David Thomas*[¶], *Chad Ellis*[#] *and Barry Anderson*[**], *on behalf of the Biology and Clinical Trials Subgroups of the US National Cancer Institute Progress Review Group in Adolescent and Young Adult Oncology*

a **Relative occurrence of the most common types of cancer in 15–39-year-olds**



- Breast cancer 14%
- Lymphoma 13%
- Melanoma 10%
- Female genital tract cancer 9%
- Thyroid cancer 9%
- Soft-tissue sarcoma* 8%
  *Excluding Kaposi sarcoma
- Testicular cancer 7%
- Colorectal cancer 5%
- Leukaemia 4%
- CNS tumours 4%
- Bone sarcoma 1%
- Kaposi sarcoma 5%
- Other 11%

15-19 : *leukaemias, lymphomas,, sarcomas, brain tumors*

20-29: *lymphomas, melanoma, thyroid, testicular cancer ,*

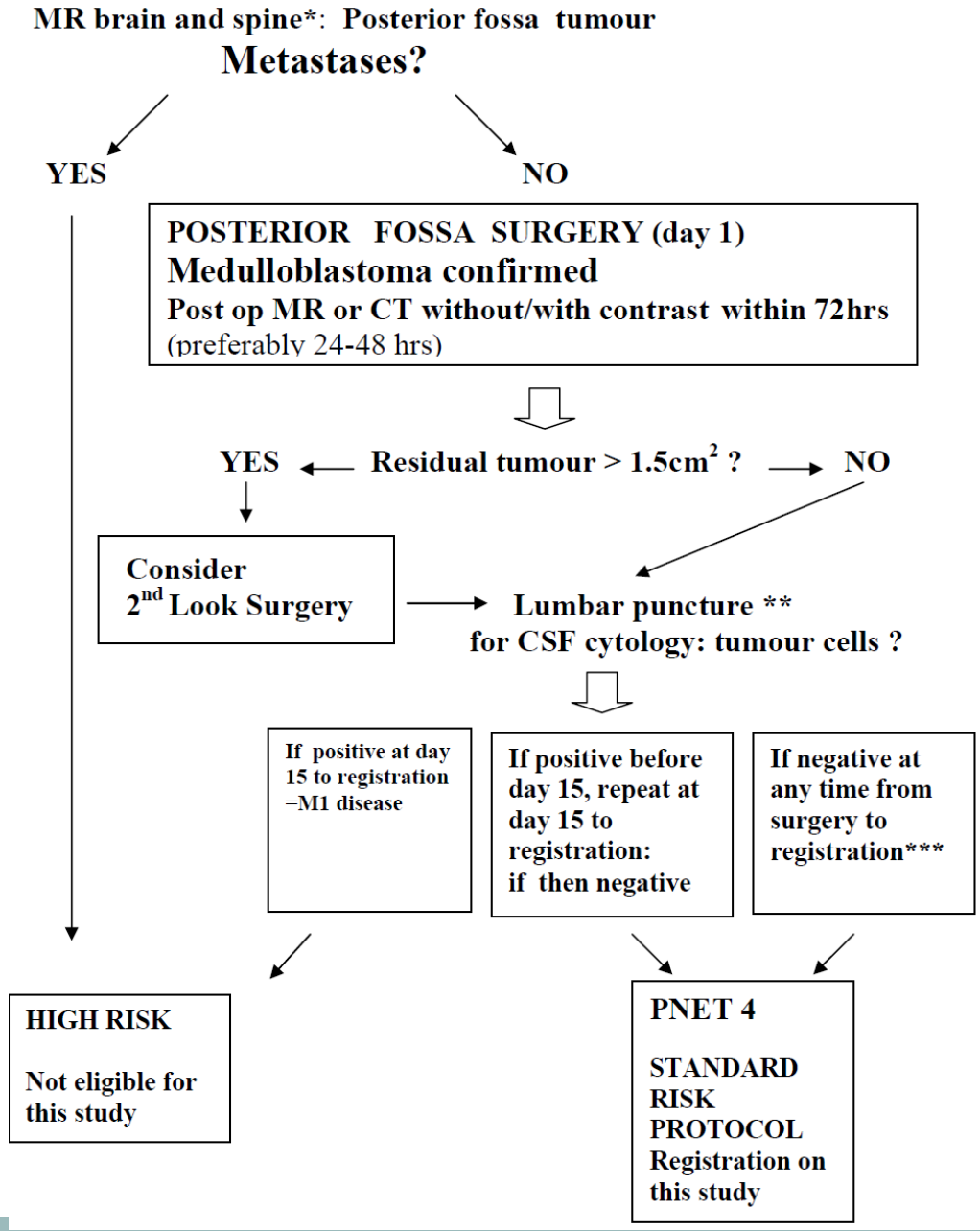
30-39 breast, colorectal

INCIDENZA

	UOMINI			DONNE		
	0-44	45-64	65+	0-44	45-64	65+
1°	Cute* (14,2%)	Prostata (15,6%)	Prostata (20,3%)	Mammella (32,7%)	Mammella (35,5%)	Mammella (18,8%)
2°	Testicolo (12,9%)	Cute* (14,7%)	Cute* (16,0%)	Tiroide (12,6%)	Cute* (12,0%)	Cute non melano-ma (16,6%)
3°	Non Hodgkin (8,2%)	Polmone (12,8%)	Polmone (14,4%)	Cute* (12,0%)	Colonretto (9,6%)	Colonretto (14,2%)
4°	Melanoma (7,7%)	Colonretto (12,5%)	Colonretto (12,1%)	Melanoma (7,2%)	Corpo utero (5,9%)	Polmone (5,6%)
5°	Leucemie (6,1%)	VADS (6,2%)	Vescica (6,5%)	Cervice (4,3%)	Tiroide (4,6%)	Stomaco (5,3%)

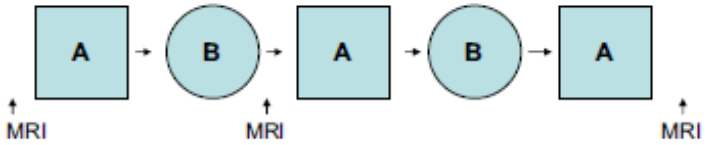
*Tabella 2. AIRTUM, incidenza 2003-2005. Primi cinque tumori in termini di frequenza e percentuale rispetto al totale dei tumori diagnosticati per sesso e classe d'età (0-44, 45-64, 65+ anni). *Non melanoma*

	Età pediatrica(incidenza per milione)	Età adulta (incidenza per milione)
MEDULLOBLASTOMA	9.6 /1.000.000	0.54/1.000.000
EPENDIMOMA	4.3/1.000.000 (1-20 aa)	
ASTROCITOMA PILOCITICO		
GERMINOMA		
PENT SNC		0.2/1.000.000 (30-39 aa)
NEUROBLASTOMA		0.3/1.000.000
RABDOMIOSARCOMA	3/1.000.000	1/1.000.000
EWING	6/1.000.000	0.2/1.000.000 (300 casi pubblicati)
WILMS	7/1.000.000	0.3/1.000.000


MR brain and spine*: Posterior fossa tumour
Metastases?
YES
NO
POSTERIOR FOSSA SURGERY (day 1)
Medulloblastoma confirmed
Post op MR or CT without/with contrast within 72hrs
(preferably 24-48 hrs)
YES
Residual tumour > 1.5cm² ?
NO
Consider
2nd Look Surgery
Lumbar puncture **
for CSF cytology: tumour cells ?
If positive at day 15 to registration =M1 disease
If positive before day 15, repeat at day 15 to registration: if then negative
If negative at any time from surgery to registration***
HIGH RISK
Not eligible for this study
PNET 4
STANDARD RISK PROTOCOL
Registration on this study

A PHASE II STUDY OF PRERADIOTHERAPY CHEMOTHERAPY FOLLOWED BY HYPERFRACTIONATED RADIOTHERAPY FOR NEWLY DIAGNOSED HIGH-RISK MEDULLOBLASTOMA/PRIMITIVE NEUROECTODERMAL TUMOR: A REPORT FROM THE CHILDREN'S ONCOLOGY GROUP (CCG 9931)

1. PRE-RADIOTHERAPY CHEMOTHERAPY



Regimen A (cisplatin, cyclophosphamide, etoposide, vincristine) alternating monthly with
Regimen B (carboplatinand etoposide)

(1 month recovery)

2. HYPERFRACTIONATED RADIOTHERAPY over 2 months

1 Gy BID administered to craniospinal axis (40 Gy) and primary tumor (72 Gy)

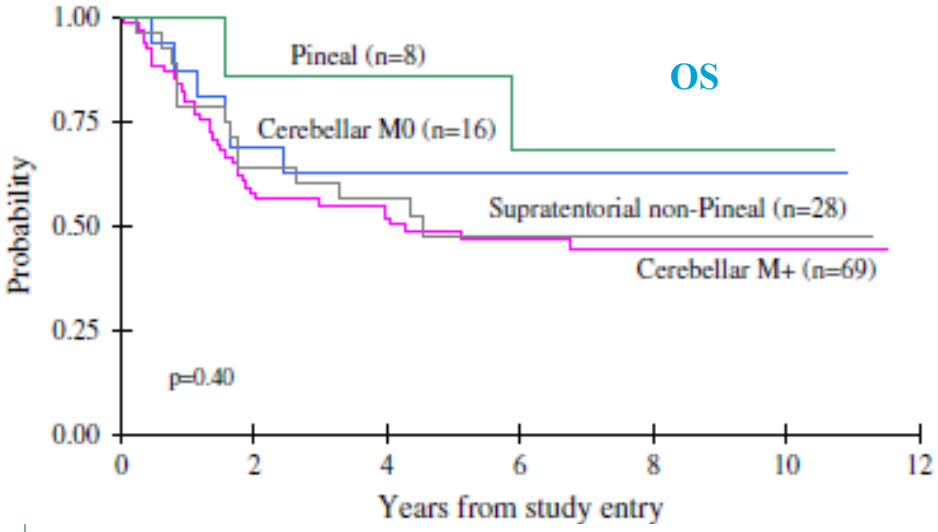
CCG 9931 ALTO RISCHIO

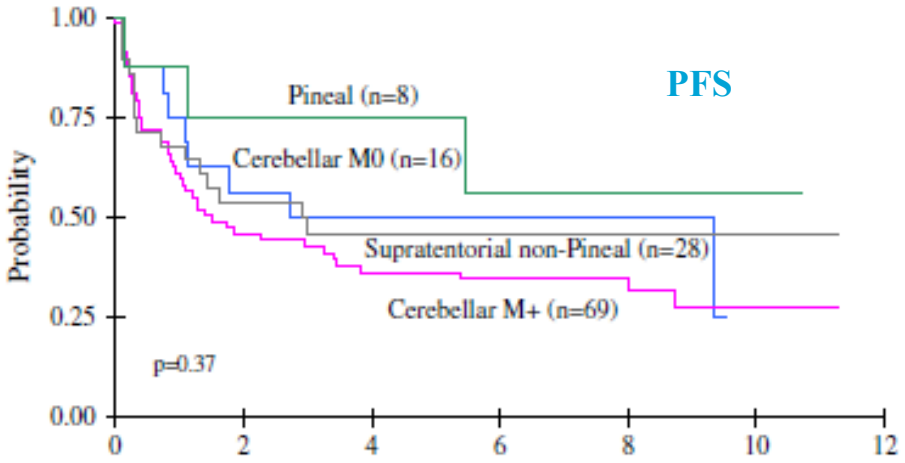
124 pz.

68% completavano lo schema

PFS a 5 aa 43%

OS a 5 aa 54%





Int.J Radiat Oncol Biol Phys 74(4):1006-1011,2009

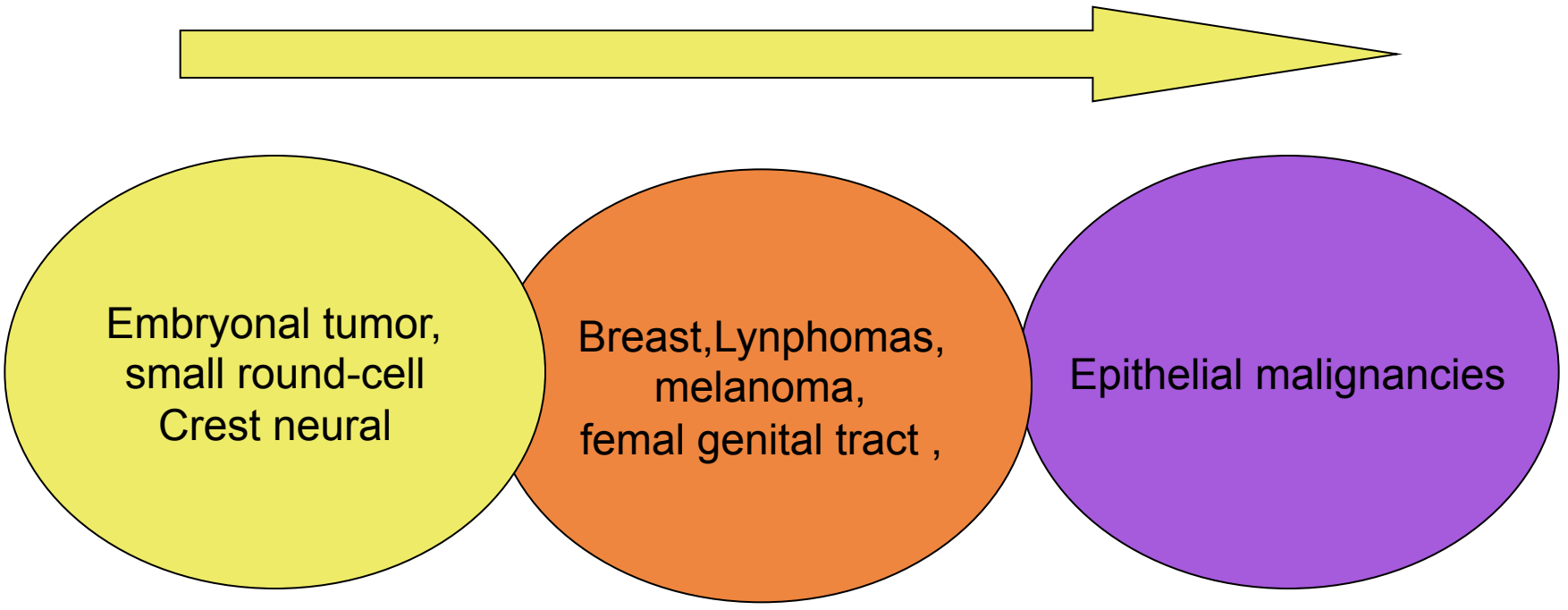
VOLUME 29 · NUMBER 19 · JULY 1 2011

JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

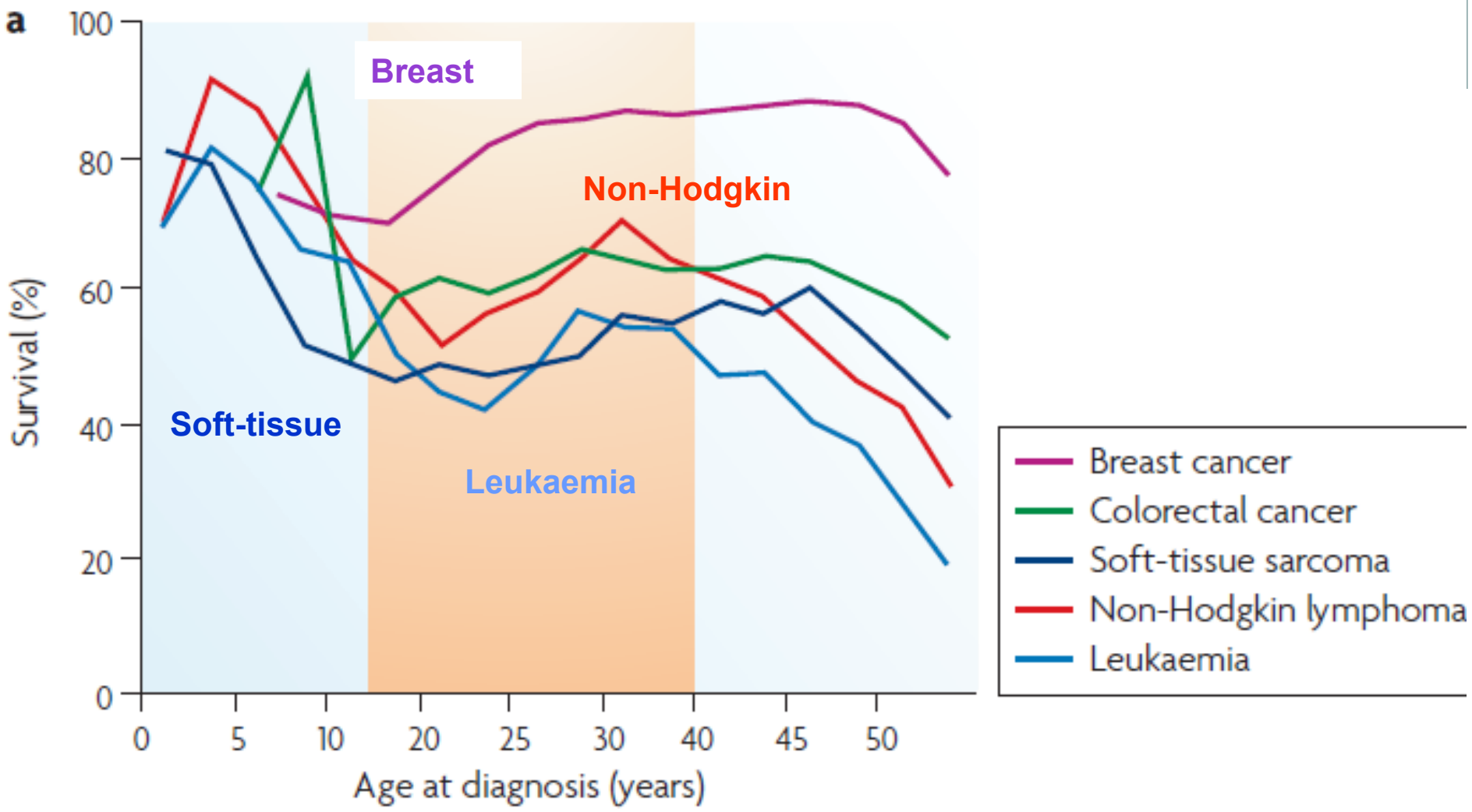
Adult Medulloblastoma Comprises Three Major Molecular Variants

0-14	15-39	>40
pediatric	adolescent and young adults	adults



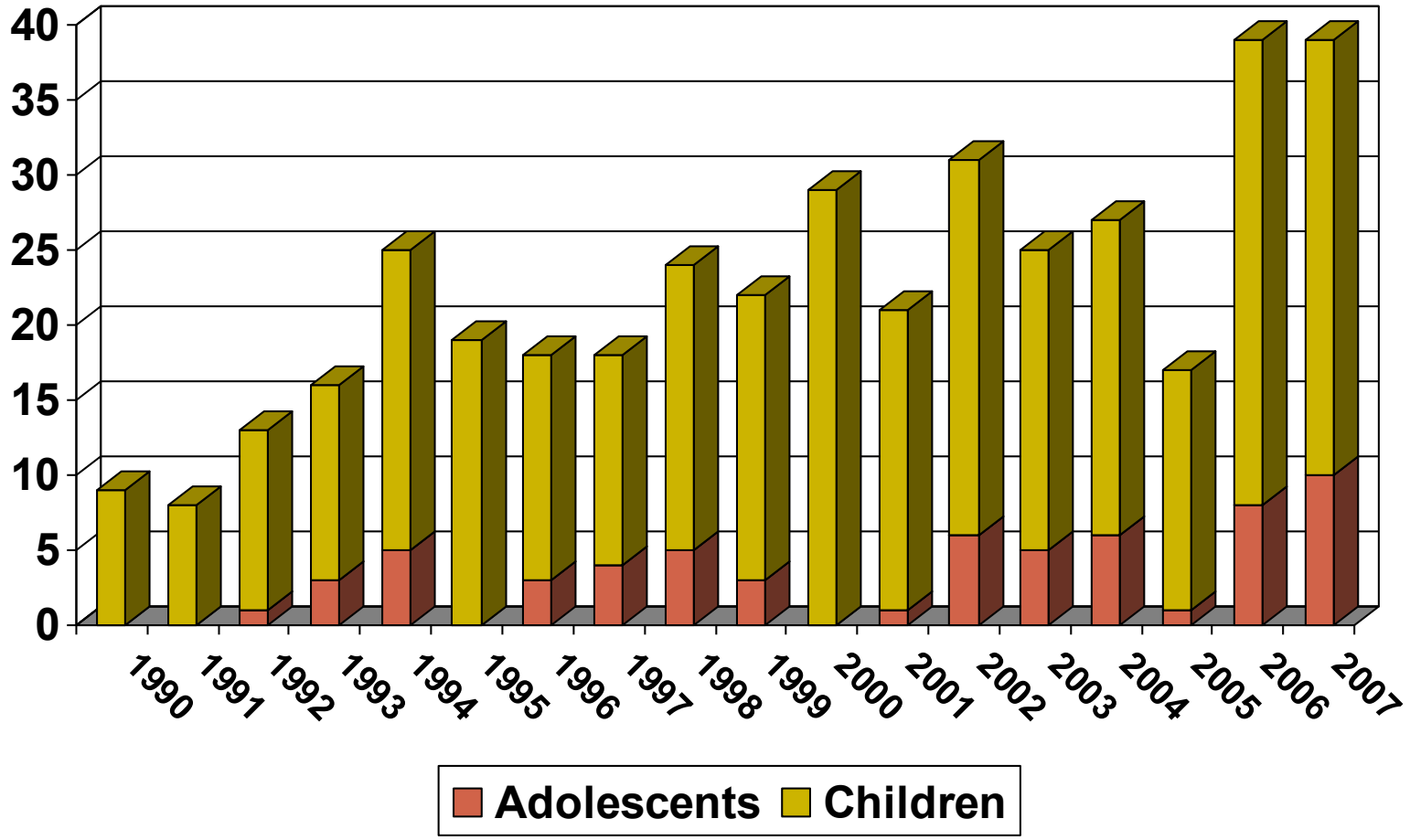
The distinctive biology of cancer in adolescents and young adults

Archie Bleyer[*†], *Ronald Barr*[§], *Brandon Hayes-Lattin*[||], *David Thomas*[¶],



ALL in 2nd CR:
Number of transplants per year

AIEOP-TMO

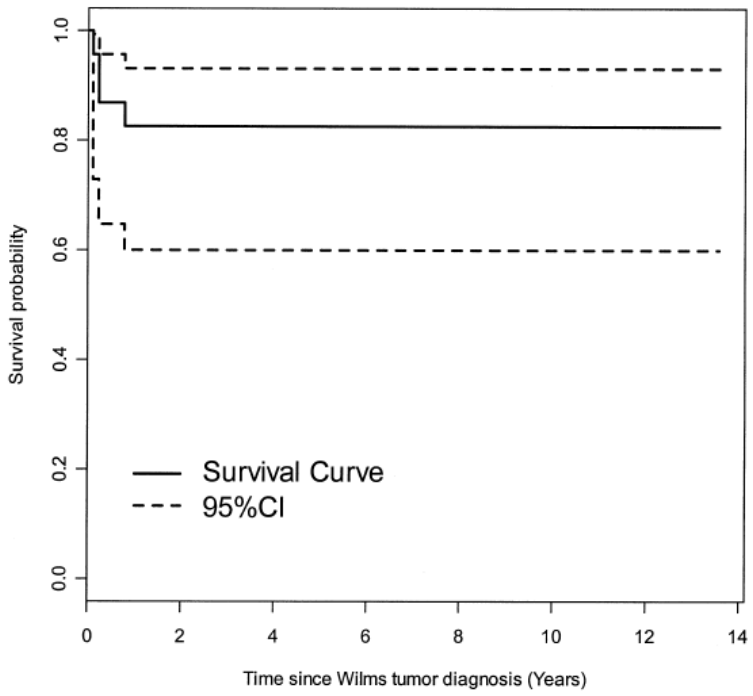


CLINICAL INVESTIGATION

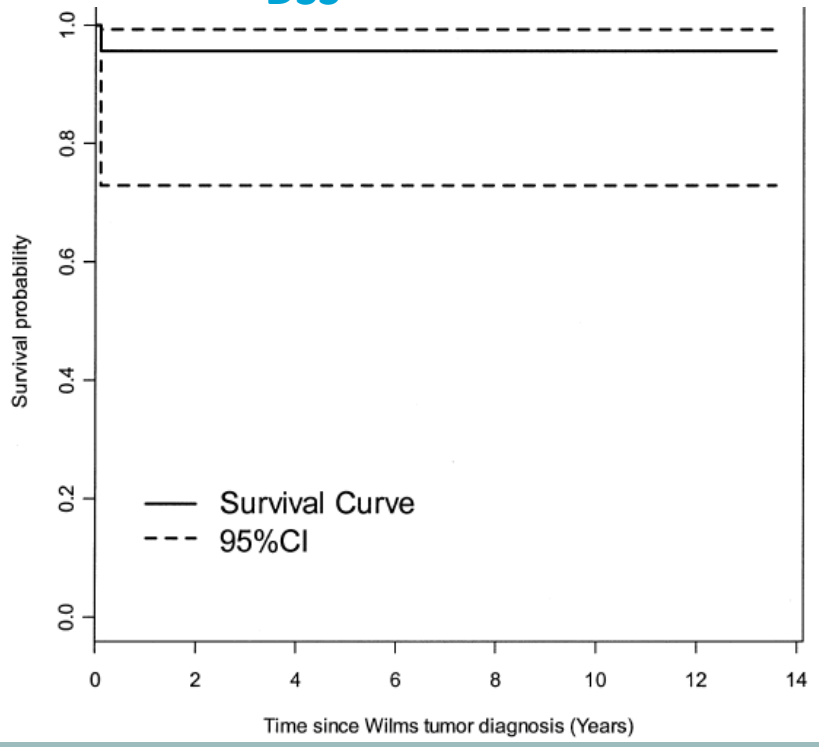
TREATMENT OUTCOMES IN ADULTS WITH FAVORABLE HISTOLOGIC TYPE WILMS TUMOR—AN UPDATE FROM THE NATIONAL WILMS TUMOR STUDY GROUP

National Wilms Tumor Studies (NWTS) 4-5 protocol 23 adult patients

OS



DSS



VOLUME 28 · NUMBER 18 · JUNE 20 2010

JOURNAL OF CLINICAL ONCOLOGY

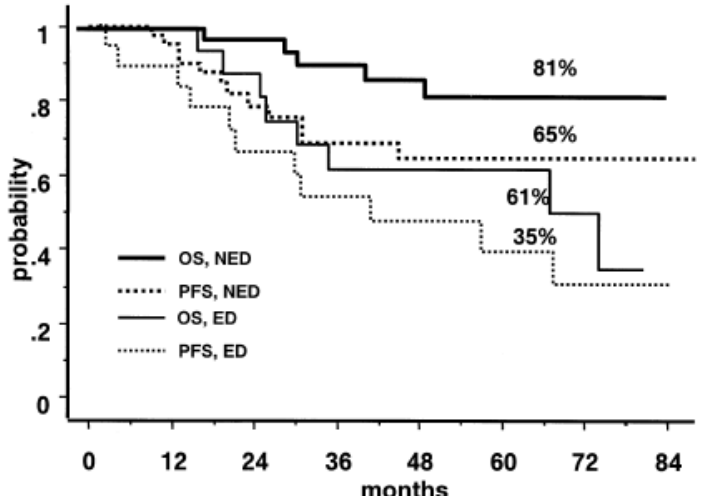
ORIGINAL REPORT

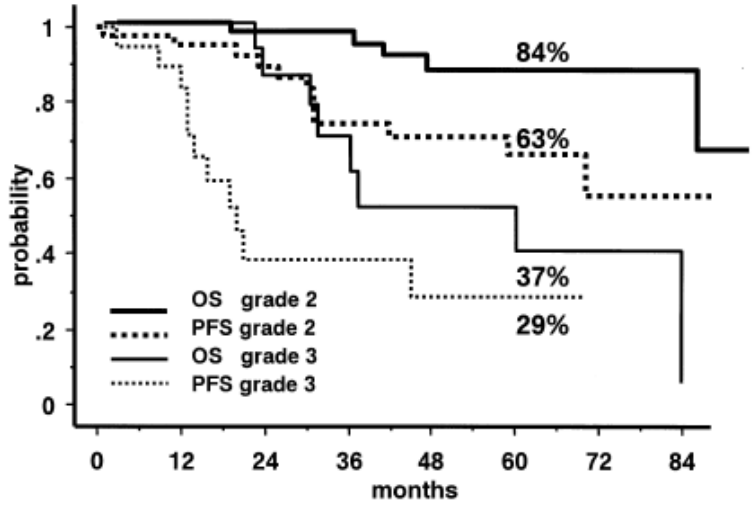
Adult and Pediatric Medulloblastomas Are Genetically Distinct and Require Different Algorithms for Molecular Risk Stratification

Results

CDK6 amplification, 10q loss, and 17q gain are the most powerful prognostic markers in adult MB. Whereas *MYC/MYCN* oncogene amplifications had a high prognostic value in pediatric MB, these aberrations were rarely observed in adult tumors. Surprisingly, adult MBs with 6q deletion and nuclear β-catenin activation did not share the excellent prognosis with their pediatric counterparts.

HYPERFRACTIONATED RADIOTHERAPY AND CHEMOTHERAPY FOR CHILDHOOD EPENDYMOMA: FINAL RESULTS OF THE FIRST PROSPECTIVE AIEOP (ASSOCIAZIONE ITALIANA DI EMATOLOGIA-ONCOLOGIA PEDIATRICA) STUDY





N.Pazienti 66

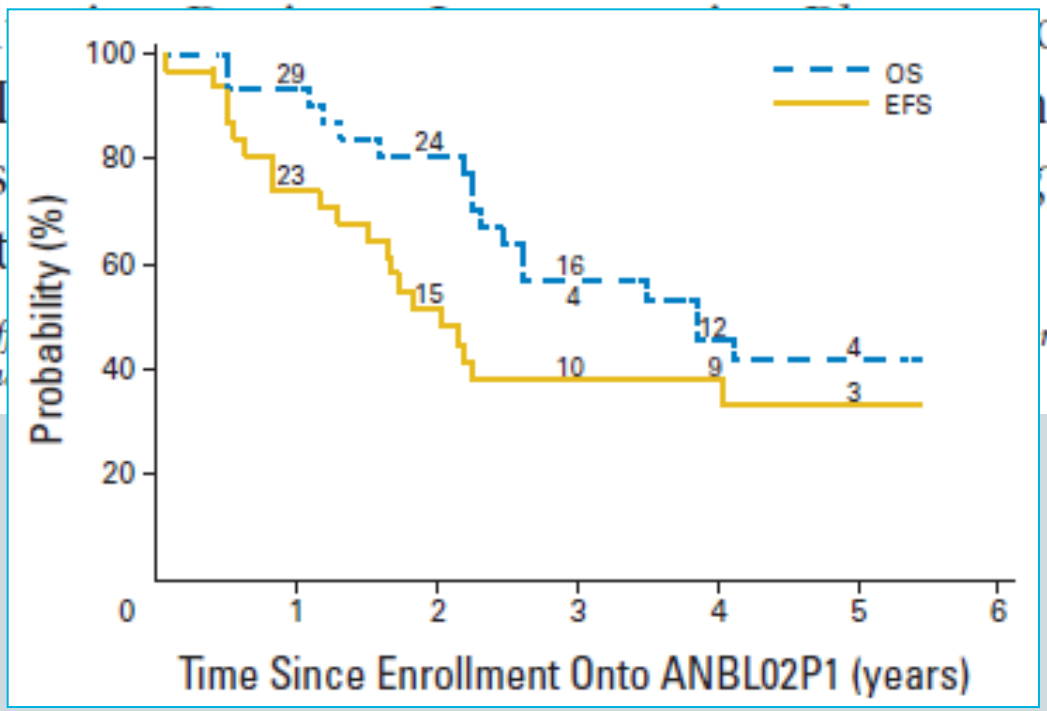
CH
- **residuo → CT+RT**
- **no residuo → RT**

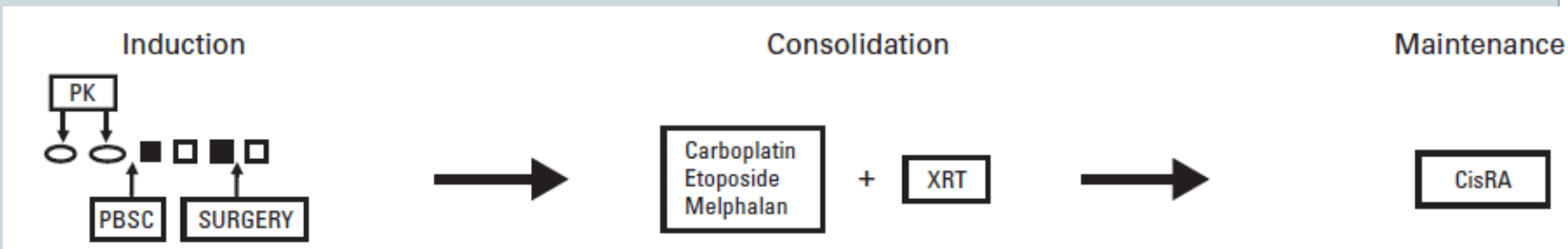
RT 1.1Gy/64 fx/70.4 Gy/2 fx die

Int. J. Radiation Oncology Biol. Phys., Vol. 58, No. 5, pp. 1336–1345, 2004

Pilot Ind… …okinetically Guided T… …losed High-Ris… …y Group St…

Julie R. Park, Jef… …r M. Santana, Peter J. Shaw, Su…





J Clin Oncol 29. © 2011

Problematiche della diversa risposta clinica nei giovani adulti in tutti i tipi di tumori

1. Scarsa esperienza clinica
2. Diversa farmacocinetica
3. Assenza di inserimento in protocolli clinici
4. Maggiore incidenza di family cancer syndromes
5. Assenza di una Classificazione internazionale dedicata(ICCC,ICD)

Raccomandazioni:

Consulta un collega pediatrico esperto sul tumore di Wilms

Fai rivedere i vetrini ad un patologo esperto

Non ritardare la CT

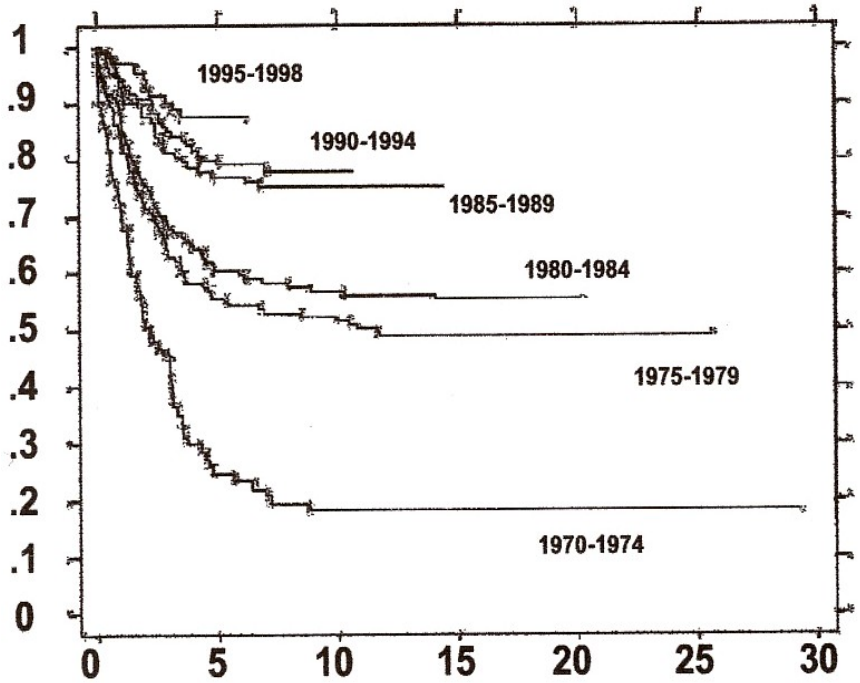
La RT deve essere iniziata dopo e non oltre 14 giorni dalla nefrectomia

Attento alla tossicità da Vincristina

Registra il paziente nel data base dei tumori pediatrici nazionale

LLA

EFS of ALL by years



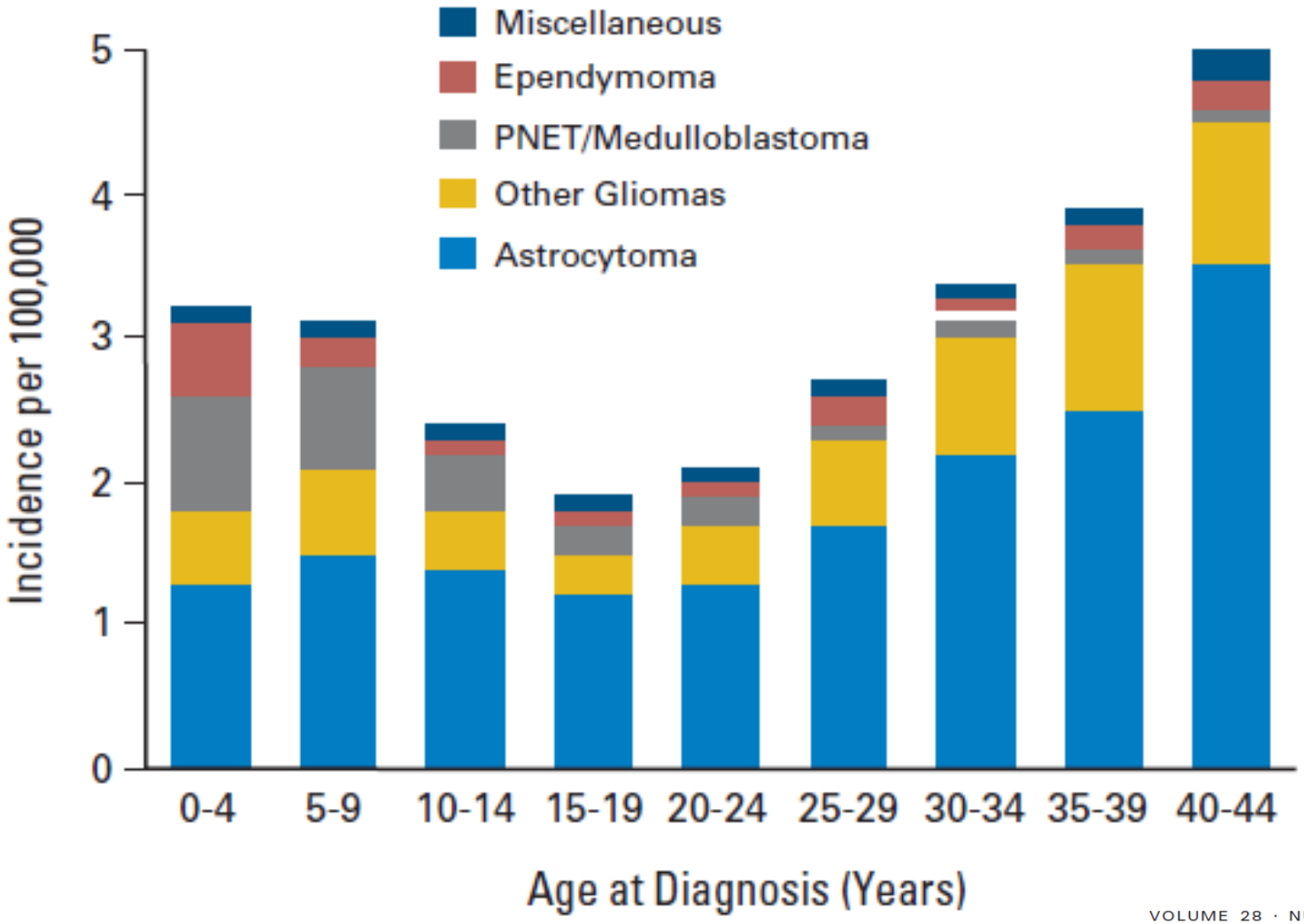
The outcome of adolescents managed with either paediatric or adult cooperative protocols has been compared in several studies.

The CR rate and EFS obtained with paediatric protocols are significantly higher and less toxic as compared to adult trials.

Brain Tumors: From Childhood Through Adolescence Into Adulthood

Mark W. Kieran, David Walker, Didier Frappaz, and Michael Prados

Central Brain Tumor Registry of the USA 1997-2001



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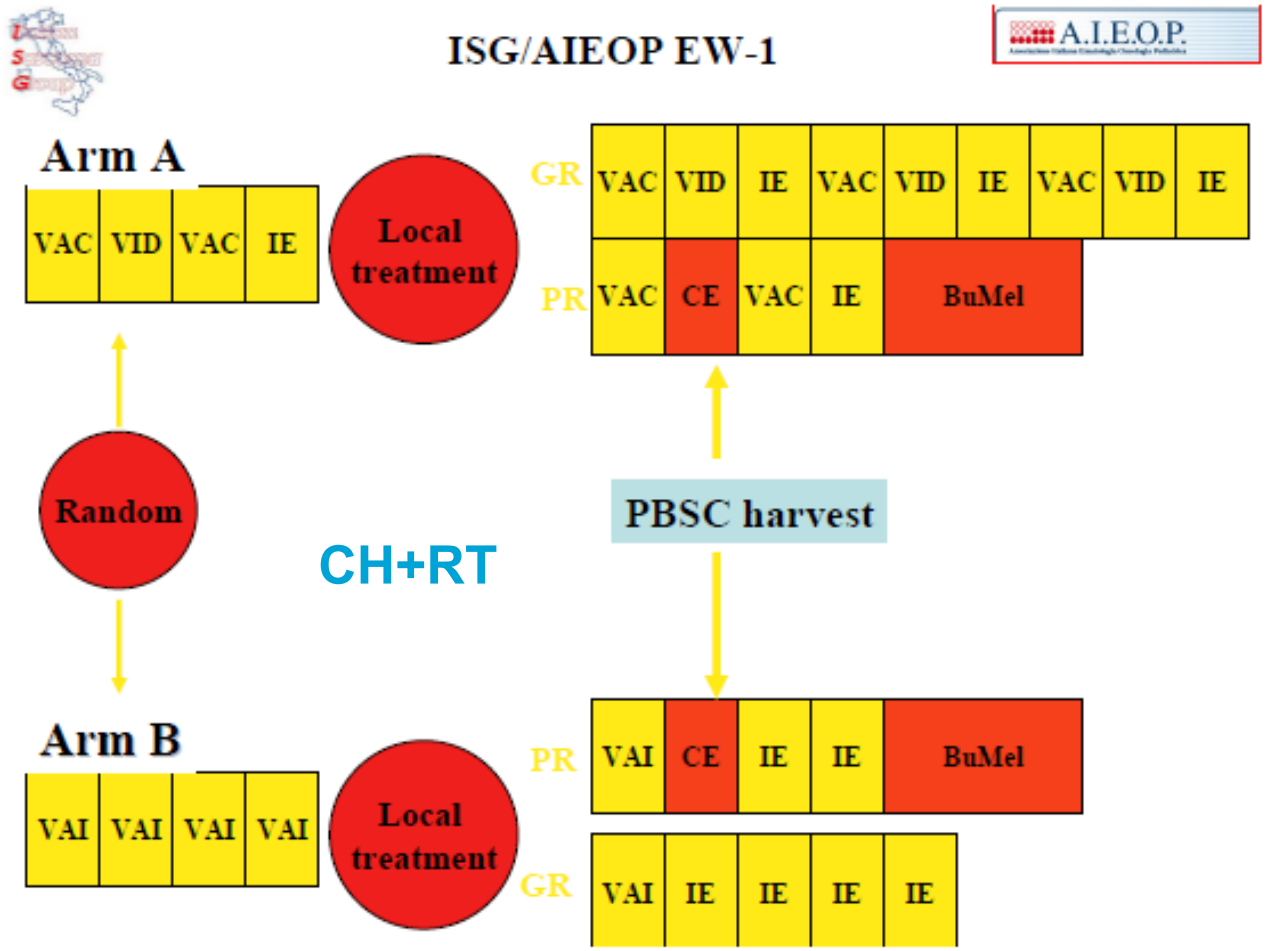
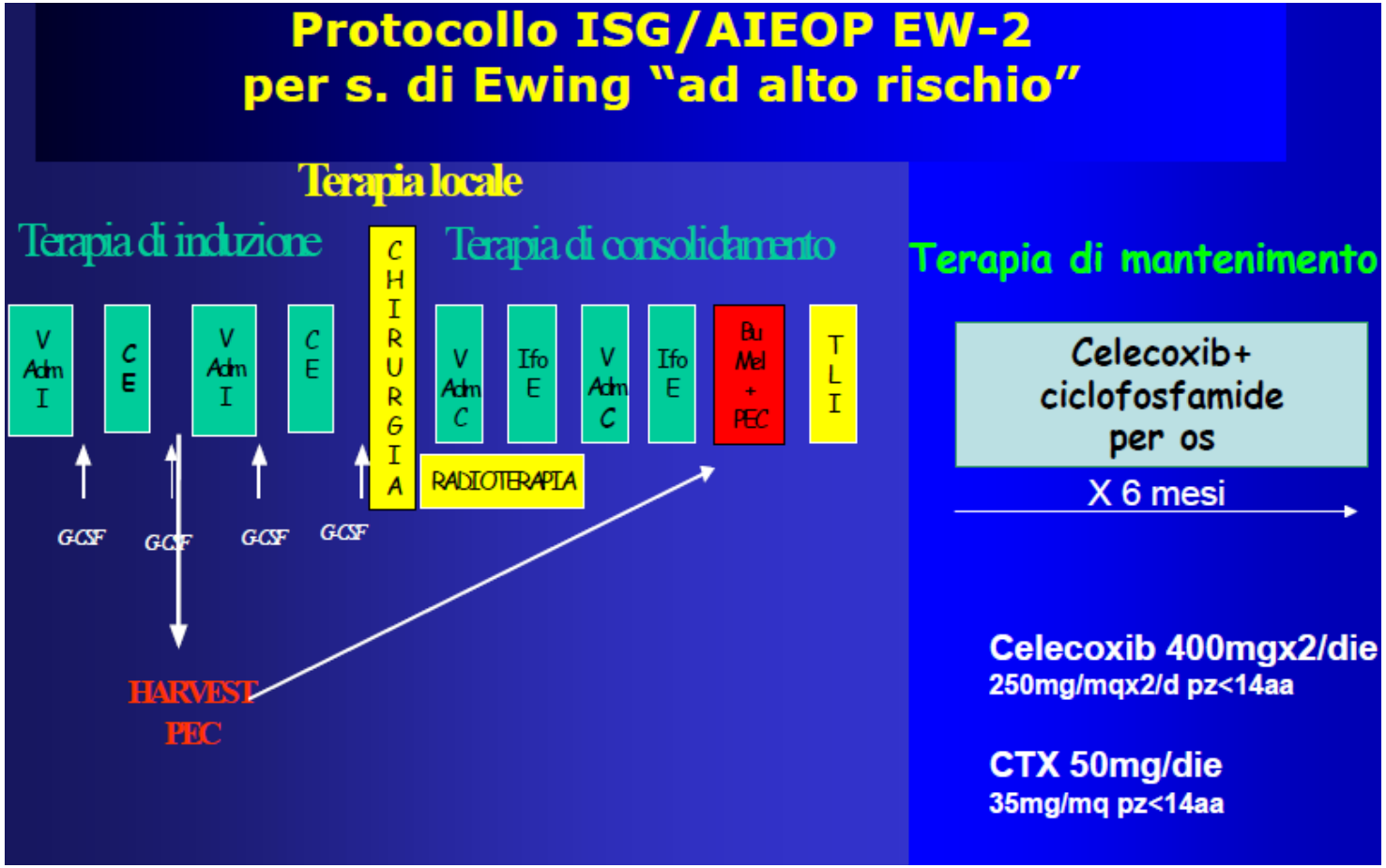


Età di arruolamento ≤ 40 aa



36 pz arruolati

Età di arruolamento ≤ 40 aa