



BAŞKENT ÜNİVERSİTESİ



Erken Evre Triple Negatif Meme Kanserinde Tedavi Yöntemi: Radyoterapi

καλοεργαί

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ANKARA
MEME
HASTALIKLARI
DERNEĞİ

ANKARA
MEME HASTALIKLARI DERNEĞİ

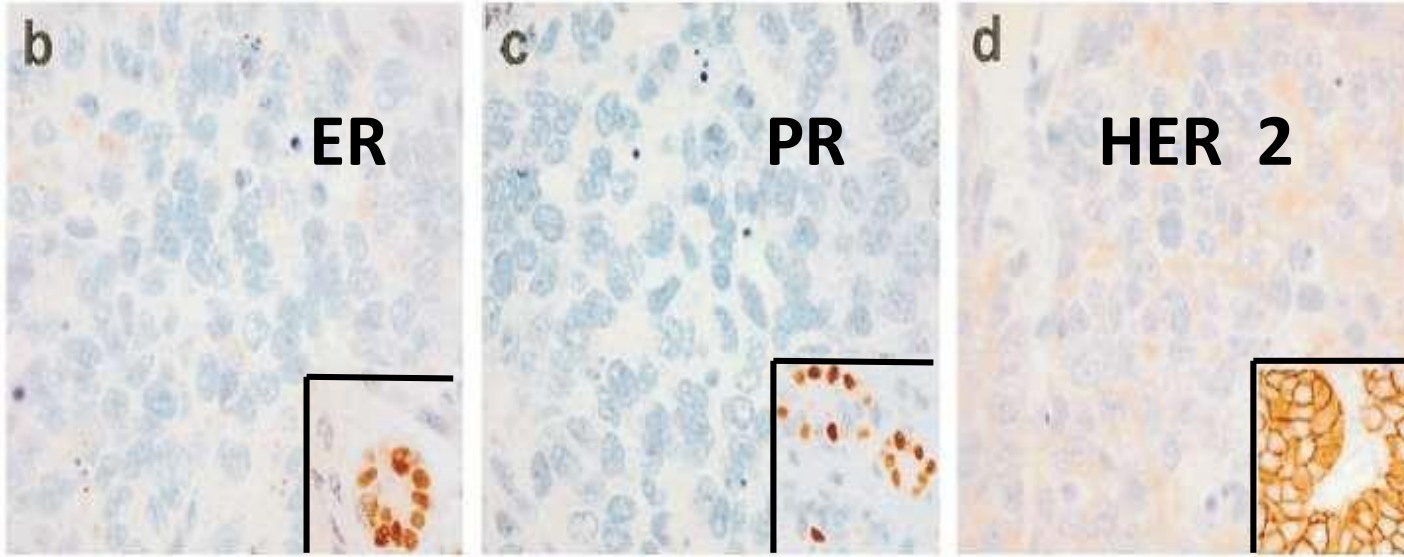
2021-2022 EĞİTİM DÖNEMİ ALTINCI TOPLANTISI

31 Mart 2022, Ankara

Sunum Planı

- ❖ Triple negatif meme kanserinde prognoz ve tedavi yanıtı
- ❖ Triple negatif meme kanserinde NAKT sonrası RT (MKC, Mastektomi)
- ❖ Triple negatif meme kanserinde adjuvan RT(MKC, Mastektomi)
- ❖ Triple negatif meme kanserinde boost tedavi
- ❖ Triple negatif meme kanserinde hipofraksiyone RT
- ❖ Triple negatif meme kanserinde APBI
- ❖ Sonuç ve Öneriler

Triple negatif meme kanseri



**ER ve PR
ekspresyonu:IHK
<1% normal meme
kontrole göre**

**HER2 IHK negatif:
0 ya da +1
veya
+2 boyanma FISH (-)**

İmmünotipik özellikleri

ER ve PR -

HER2 -

P-63 -

P-cadherin -

KIT

Sitokeratin 5/6 +

HER1 (EGFR) +

Vimentin +

Patolojik özellikleri

BRCA1 germline mutasyonu

P53 mutasyonu ~%80

Duktal ve metaplastik histoloji

Coğrafik nekroz

Yüksek grad (grad 3)

Yüksek proliferasyon indeksi

Nükleer polimorfizm

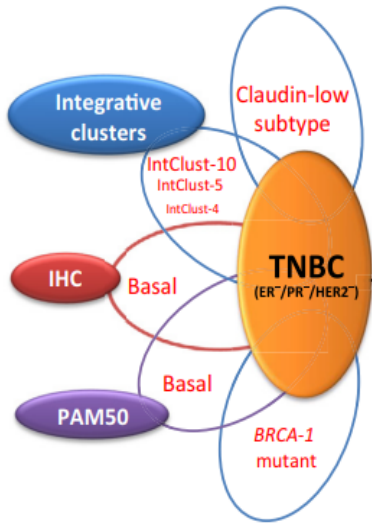
Sınırları iterek invazyon

Ganesan S, Richardson AL et al. In: Cold Spring Harbor Symposia on Quantitative Biology: Molecular Approaches to Controlling Cancer. Vol 70, 2005

Hammond ME, Hayes DF, Dowsett M, et al. American Society of Clinical Oncology/College Of American Pathologists guideline recommendations for immunohistochemical testing of estrogen and progesterone receptors in breast cancer. J Clin Oncol 2010; 28:2784.

Wolff AC, Hammond ME, Hicks DG, et al. Recommendations for human epidermal growth factor receptor 2 testing in breast cancer: American Society of Clinical Oncology/College of American Pathologists clinical practice guideline update. J Clin Oncol 2013; 31:3997.

Triple negatif meme kanseri heterojen



Tumors (%)	7 molecular subclasses	NAC pCR rates (%)	Candidate therapeutic targets
8	Basal-like (BL2) Growth factor and metabolic signaling with myoepithelial markers	0	EGFR, MET, EPHA2, mTOR
1	Luminal androgen receptor (LAR) Hormonal-mediated signaling-androgen receptor (AR)	10	AR, Hsp90, PI3K, FGFR4
10	Mesenchymal stem-like (MSL) Modulator of epithelial-mesenchymal transition (EMT), differentiation and stemness; Growth factor and angiogenesis-mediated signaling (low levels of proliferation drivers)	23	SRC, PI3K, MEK1/2, mTOR, PDGFR, NFKβ, IGF1R, FGFR, TGFBR1/II
23	Immunomodulatory (IM) Immune-mediated signaling	30	JAK1/2, LYN, STATs, IRF1/7/8, BTK, NFKβ
20	Mesenchymal (M) EMT and differentiation	31	SRC, PI3K and mTOR, IGF1R, PDGFR, FGFR
17	Unstable (UNS) DNA damage responses and cell proliferation	33	PARP 1, TTK, PLK1, CHEK1, AURKA/B, RAD51
21	Basal-like (BL1) Proliferation drivers: cell cycle, cell division, and DNA replication and responses	52	PARP 1, TTK, PLK1, CHEK1, AURKA/B, RAD51

- ❖ Tüm meme kanserlerinin ~% 9-20'i (yılda 200 bin vaka)
- ❖ Genellikle <40y tanı alır
- ❖ ~%20 BRCA mutasyonu + (BRCA1, tüm meme ca <%6 BRCA+)
- ❖ BRCA1 mutant meme kanserlerinin %75'i TN/bazal-benzeri
- ❖ ~%20 AR(+) \rightarrow Anti-androjen tx
- ❖ Bazal benzeri \neq triple negatif (TNMK ~%71 bazal-benzeri; bazal benzeri ~%77 TNMK)

Lehmann JNCI 2011 : 1 (BL1), basal-like 2 (BL2), immune modulatory (IM), mesenchymal (M), mesenchymal stem-like (MSL), and luminal androgen receptor (LAR)

Swain S. Triple-Negative Breast Cancer: Metastatic Risk and Role of Platinum Agents 2008 ASCO Clinical Science Symposium, 2008. June 3, 2008.

Trivers KF, Lund MJ, Porter PL, et al. The epidemiology of triple-negative breast cancer, including race. Cancer Causes Control 2009; 20:1071.



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Seminars in Oncology

journal homepage: www.elsevier.com/locate/seminoncol



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Early stage triple negative breast cancer: Management and future directions

Lubna N. Chaudhary, MD, MS*

Division of Hematology/Oncology, Froedtert and Medical College of Wisconsin, Milwaukee, WI



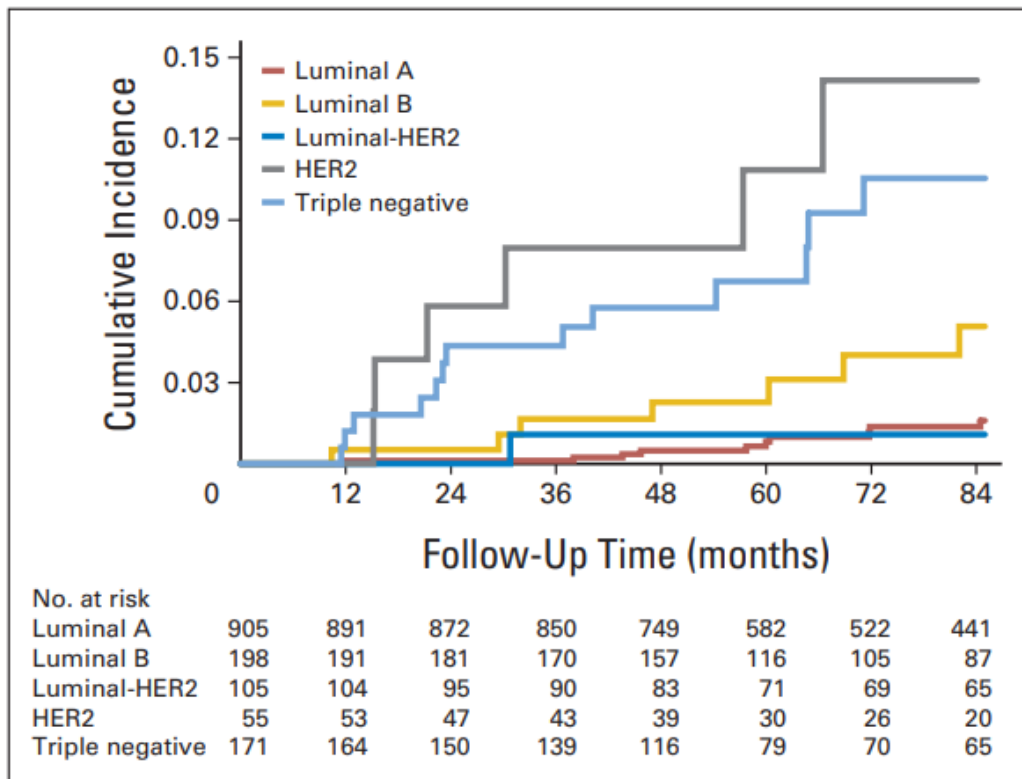
- ❖ Triple negatif meme kanseri agresif seyirli, rekürrens riski yüksek,
- ❖ UM erken (**akciğer ve beyin**)→3-5 yılda erken evrede %25-30 UM!
- ❖ Rekürrensler ilk 3 yılda ↑, ilk 5 yıl mortalite oranları ↑
- ❖ Neoadjuvan KT (≥T1b/1c)→yanıt değerlendirilmesi! (~ pCR %30-40)

«Principles of surgery and radiation for TNBC are the same as in all other breast cancers and there are no TNBC-specific recommendations» for local management. Systemic chemotherapies have evolved over time with improvement in responses and patient outcomes»

N= 1434 BCT medyan takip 7
MKC+RT

Age, Breast Cancer Subtype Approximation, and Local Recurrence After Breast-Conserving Therapy

Nils D. Arvold, Alphonse G. Taghian, Andrzej Niemierko, Rita F. Abi Raad, Meera Sreedhara, Paul L. Nguyen, Jennifer R. Bellon, Julia S. Wong, Barbara L. Smith, and Jay R. Harris



Lokal rekürrens

- Lum A %0.8
- Lum B %2.3
- Lum HER* %7.4
- HER2* %10.8
- TNMK %6.7

*** Trastuzumab \emptyset



Response to Radiotherapy After Breast-Conserving Surgery in Different Breast Cancer Subtypes in the Swedish Breast Cancer Group 91 Radiotherapy Randomized Clinical Trial

Martin Sjöström, Dan Lundstedt, Linda Hartman, Erik Holmberg, Fredrika Killander, Anikó Kovács, Per Malmström, Emma Niméus, Elisabeth Werner Rönnerman, Mårten Fernö, and Per Karlsson

❖ Subtip RT cevabında prediktif değil

❖ HER2 + en az fayda!

❖ Triple negatif hastalarda meme kanserine bağlı ölüme en fazla etki!

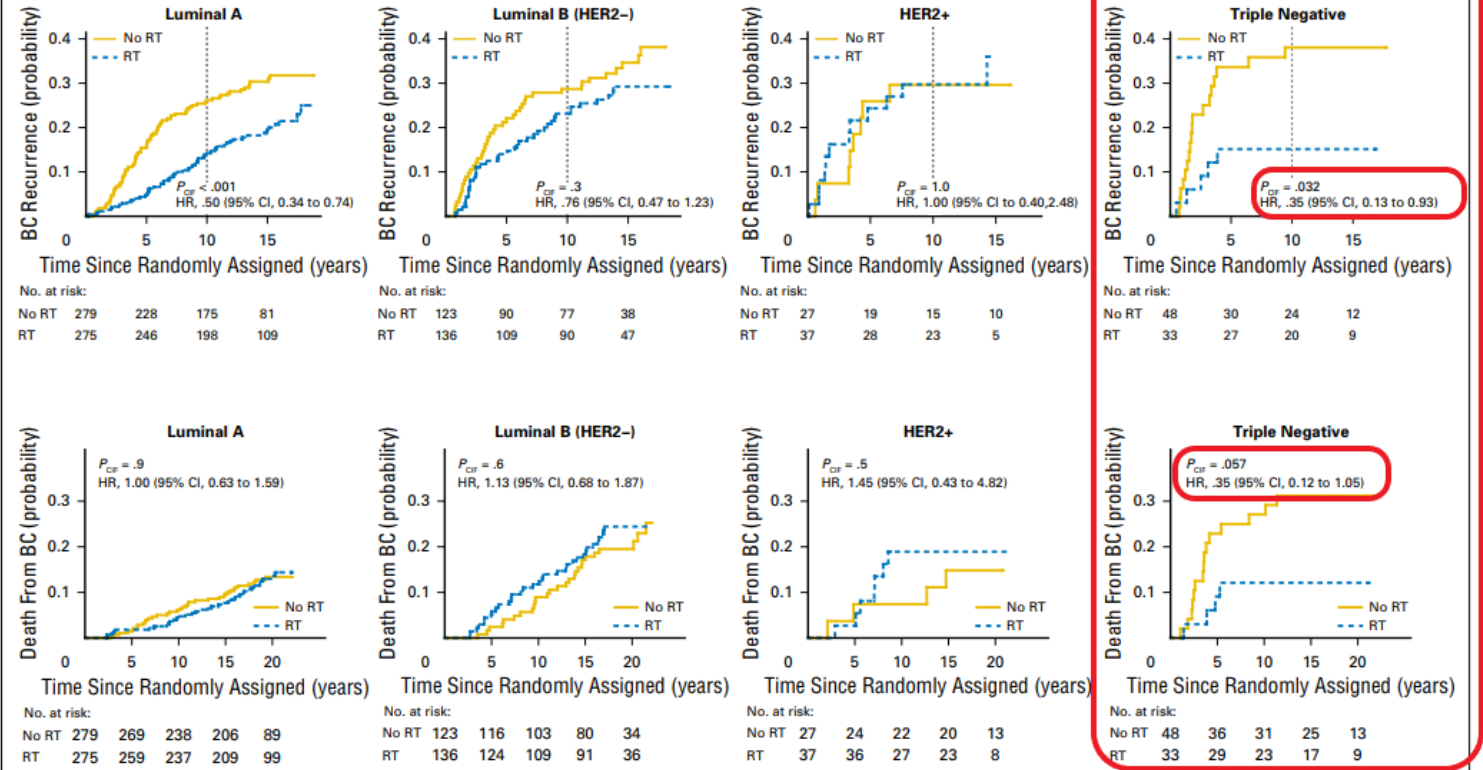
❖ Triple negatif meme kanserinde rekürrensi ↓

❖ N= 1,003 LN (-), evre I-II meme ca

❖ Swedish Breast Cancer Group 91 Radiotherapy trial

❖ Randomizasyon MKC ± RT, Adjuvan sistemik tedavi %8

❖ N=958 IHK ve insitu hibridizasyon ile subtiplere



Meme kanserinde subtipler RT yanıtını belirleyebilir mi?

Radiation therapy in the locoregional treatment of triple-negative breast cancer

Meena S Moran

This Review assesses the relevant data and controversies regarding the use of radiotherapy for, and locoregional management of, women with triple-negative breast cancer (TNBC). In view of the strong association between *BRCA1* and TNBC, knowledge of baseline mutation status can be useful to guide locoregional treatment decisions. TNBC is not a contraindication for breast conservation therapy because data suggest increased locoregional recurrence risks (relative to luminal subtypes) with breast conservation therapy or mastectomy. Although a boost to the tumour bed should routinely be considered after whole breast radiation therapy, TNBC should not be the sole indication for post-mastectomy radiation, and accelerated delivery methods for TNBC should be offered on clinical trials. Preliminary data implying a relative radioresistance for TNBC do not imply radiation omission because radiation provides an absolute locoregional risk reduction. At present, the integration of subtypes in locoregional management decisions is still in its infancy. Until level 1 data supporting treatment decisions based on subtypes are available, standard locoregional management principles should be adhered to.



Lancet Oncol 2015; 16: e113-22
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Meena.Moran@yale.edu

TNMK radyosensitivitesi konusunda veri yetersiz.... Ancak etkin!

- ❖ **TNMK radyorezistan mı radyosensitif mi?**
- ❖ Danish 82b/c subgrup analizine göre radyorezistan
- ❖ Oxford meta-analizi 2011, radyorezistan
- ❖ **Ancak Danish çalışması dikkatli incelendiğinde PMRT ile TNMK'de ~%50 LRR riski ↓**
- ❖ **BRCA1 mutant genetik radyosensitif**
- ❖ TNMK'de RT uygulanmalı, veriler yetersiz

	LRR (%)		Absolute difference
	Without PMRT	With PMRT	
Lum A	32%	3%	29%
Lum B	48%	3%	48%
TNBC	32%	15%	17%
HER2+	33%	21%	12%

Greater relative benefit of radiation is suggested for luminal subtypes or those with oestrogen receptors, than for those with the TNBC subtype. Data are from Kyndi and colleagues⁷³ (patients treated in the Danish post-mastectomy trials). LRR=locoregional relapses. PMRT=post-mastectomy radiation therapy. Lum A=luminal A. Lum B=luminal B. TNBC=triple-negative breast cancer.

Table 2: Radiation treatment for patients of different breast cancer subtypes who had a mastectomy

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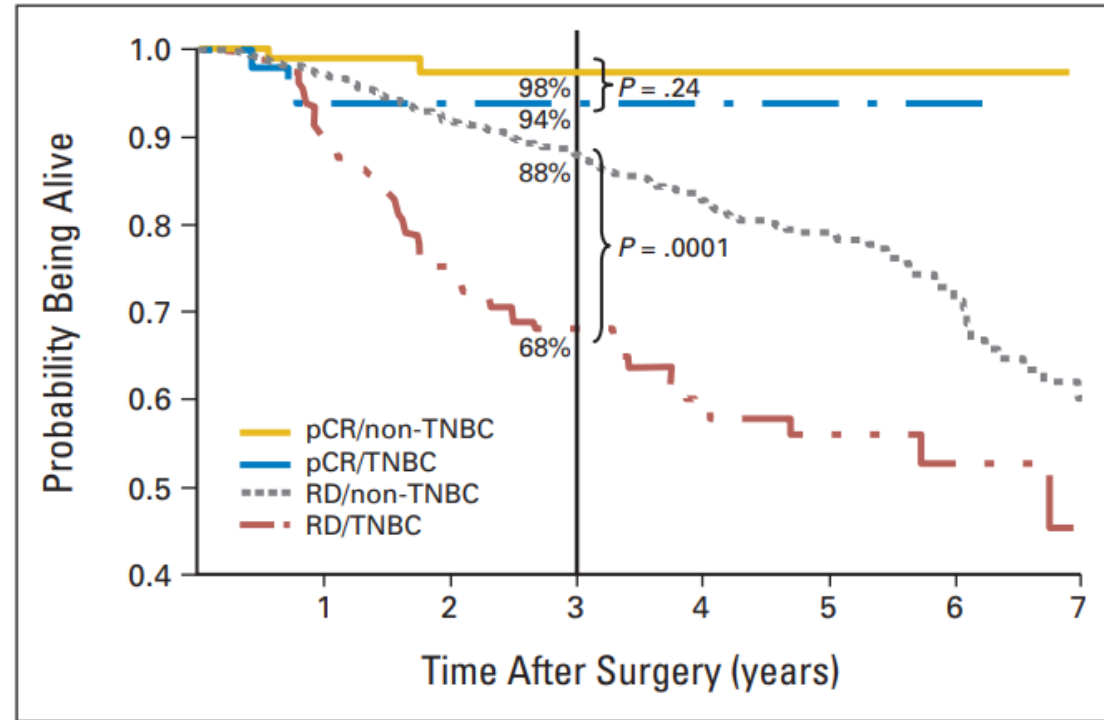
NAKT TNMK'de rasyoneli

- ❖ **ASCO 2021** TNMK için $\geq T1c$, ve tm boyutundan bağımsız cN+ için NAKT öneriri
- ❖ **St Gallen** paneli evre II ve III tm'de, HER-2 pozitif ya da **triple negatif kanserlerde**, ve inflamatuvar meme kanserinde preop NAKT önermekte
 - ❖ Tm downstaging → cerrahi opsiyon (meme ve aksilla için)
 - ❖ Yanıt değerlendirme avantajı, prognostiktir ve ek adjuvan sistemik tx gereksinimini belirler
- ❖ **TNMK'de pCR ~30-40% → DFS ↑** (pCR Ø) → **adjuvant Kapesitabin**
- ❖ **Düşük risk TNMK'de pCR elde edilen hastalarda tedavi yanıtı RT endikasyonunu etkiler mi?**
- ❖ **Sınırlı sayıda veri: KT yanıtı & subtipin LRR'e etkisi???**

Response to Neoadjuvant Therapy and Long-Term Survival in Patients With Triple-Negative Breast Cancer

Cornelia Liedtke, Chafika Mazouni, Kenneth R. Hess, Fabrice André, Attila Tordai, Jaime A. Mejia, W. Fraser Symmans, Ana M. Gonzalez-Angulo, Bryan Hennessy, Marjorie Green, Massimo Cristofanilli, Gabriel N. Hortobagyi, and Lajos Pusztai

- ❖ NACT uygulanmış N= 1118, MDACC, prospektif data 1985-2004
- ❖ TNBC 23%
- ❖ TNBC'da anlamlı pCR (%22 vs %11, P =.034),
- ❖ Buna rağmen 3y PFS ve OS anlamlı ↓
- ❖ pCR +→TNBC= non-TNBC
- ❖ Rezidüel hastalık+ →TNBC OS ↓↓

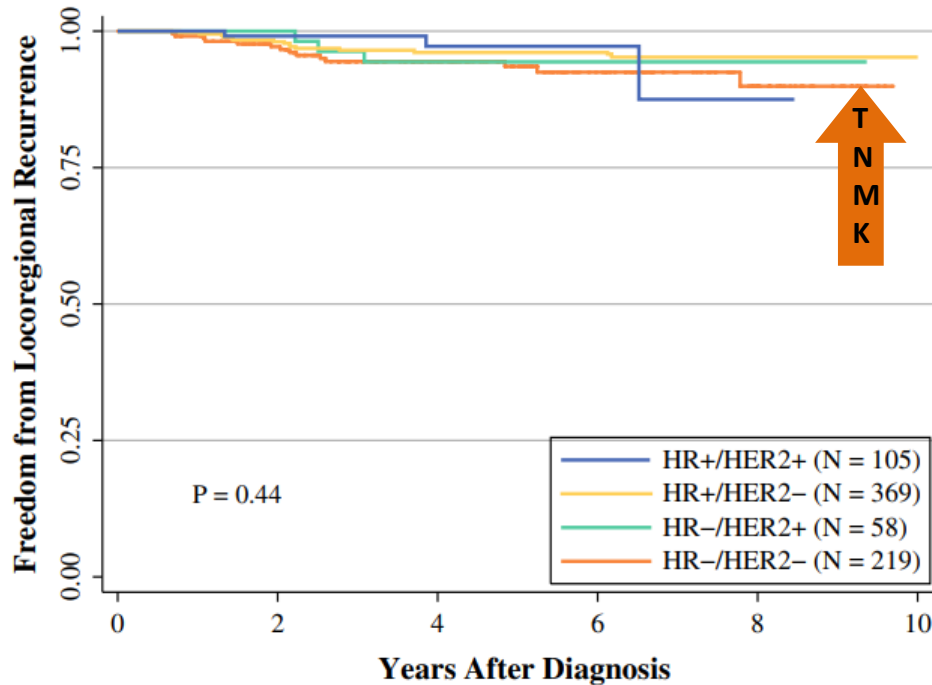


TNMC'de NAKT sonrası pCR sağkalımda güçlü bir prediktördür...

Locoregional Control According to Breast Cancer Subtype and Response to Neoadjuvant Chemotherapy in Breast Cancer Patients Undergoing Breast-conserving Therapy

Shannon K. Swisher¹, Jose Vila, MD¹, Susan L. Tucker, PhD², Isabelle Bedrosian, MD¹, Simona F. Shaitelman, MD, EdM³, Jennifer K. Litton, MD⁴, Benjamin D. Smith, MD³, Abigail S. Caudle, MD, MPH¹, Henry M. Kuerer, MD, PhD¹, and Elizabeth A. Mittendorf, MD, PhD¹

¹Department of Breast Surgical Oncology, The University of Texas MD Anderson Cancer Center, Houston, TX;



LRR-free survival by constructed subtype.

- ❖ N=751; 2005-2012
- ❖ NAKT→MKC; HER2+ → Trastuzumab
- ❖ *Subtipe göre pCR :*
 - ❖ 16.5 % (HR+/HER2-),
 - ❖ 45.7 % (HR+/HER2+),
 - ❖ 72.4 % (HR-/HER2+),
 - ❖ 42.0 % (HR-/HER2-) (P=0.001).
- ❖ *HR-/HER2- LRR-free sağ kalım pCR % 98.6 % vs no pCR 89.9 %*

Moleküler subtipe ve NAKT'ye yanıt LRR için prognostik

Collaborative Trials in Neoadjuvant Breast Cancer Group (CTNeoBC): LRR After NAC

Lancet 2014; 384: 164-72

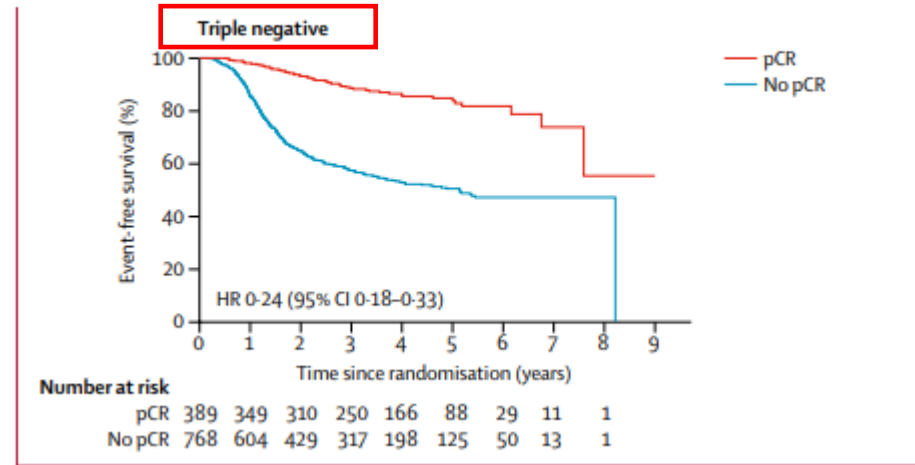
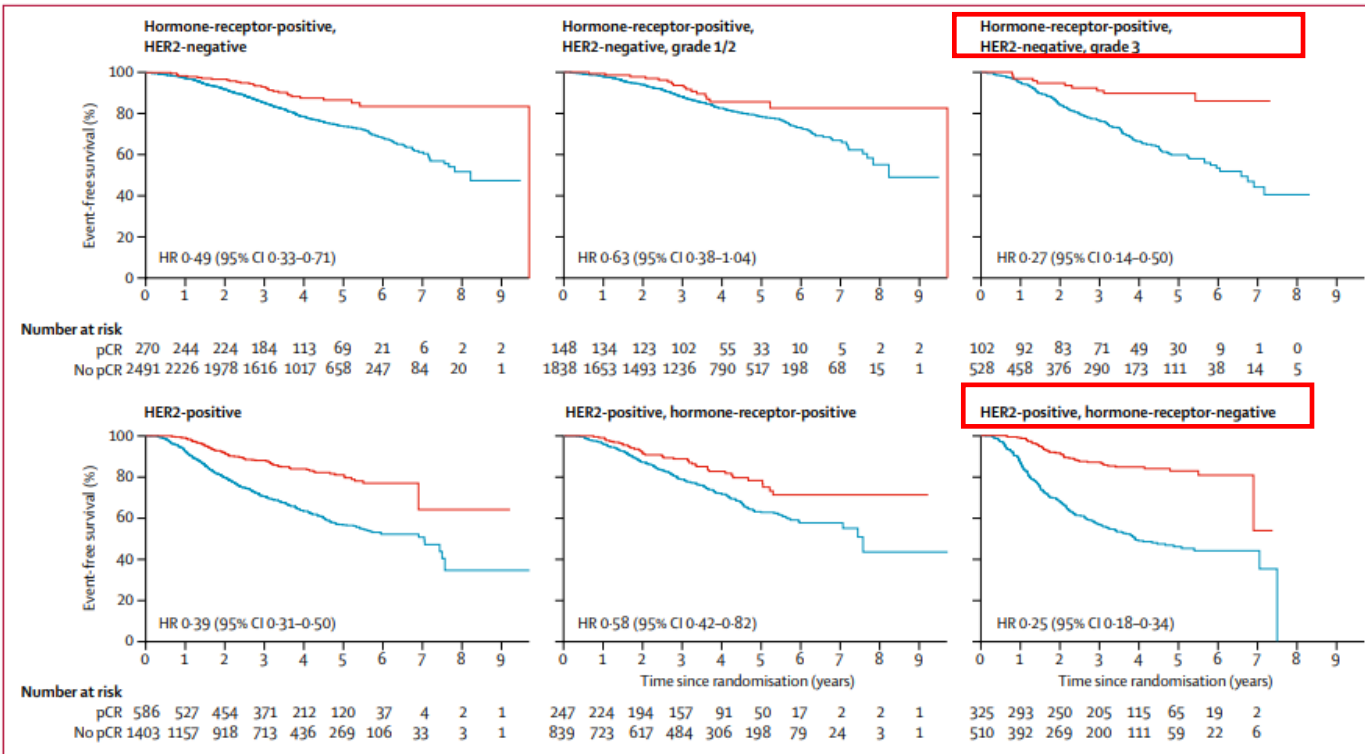
Articles



Pathological complete response and long-term clinical benefit in breast cancer: the CTNeoBC pooled analysis

Patricia Cortazar, Lijun Zhang, Michael Untch, Keyur Mehta, Joseph P Costantino, Norman Wolmark, Hervé Bonnefoi, David Cameron, Luca Gianni, Pinuccia Valagussa, Sandra M Swain, Tatiana Prowell, Sibylle Loibl, D Lawrence Wickerham, Jan Bogaerts, Jose Baselga, Charles Perou, Gideon Blumenthal, Jens Blohmer, Eleftherios P Mamounas, Jonas Bergh, Vladimir Semiglazov, Robert Justice, Holger Eidtmann, Soonmyung Paik, Martine Piccart, Rajeshwari Sridhara, Peter A Fasching, Leen Slaets, Shenghui Tang, Bernd Gerber, Charles E Geyer Jr, Richard Pazdur, Nina Ditsch, Priya Rastogi, Wolfgang Eiermann, Gunter von Minckwitz

12 çalışmada n= 11955
NAKT'ye pCR GS↑ vs EFS ↑ ilişkili
(ypT0 ypN0 ya da ypT0/is ypN0)
Agresif subtiplerde daha belirgin



NAKT sonrası meme kanserinde RT

NAKT öncesi	NAKT sonrası	MKC sonrası RT	PMRT	RNI
cT1/2 cN1+	ypT1+ ya da ypN1+ (pCR ∅)	+	+	+
cT1/2 cN1+	ypT0/is ypN0	+	Relaps riski ↑***	
cT1/2 cN0	ypT0/is ypN0	+	-	-
Lokal ileri evre (T3-4 ya da N2-3)	pCR/p CR ∅	+	+	+

❖ Standart:

❖ MKC sonrası

❖ cT3-T4, cN2-N3: Yanıttan bağımsız olarak WBRT/PMRT + RNI

❖ Tanıda cT1-2 N0 → NAKT sonrası ypT0/Tis N0

❖ PMRT ya da RNI ∅

❖ Tanıda cT1-2 N1 → NAKT sonrası ypT1+ ya da ypN+

❖ WBRT/PMRT + RNI

*** Relaps riski yüksek olgular:

❖ pN0 Premenopozal: Santral/medial tümör ve (grad 2-3 ve ER/PR negatif)

❖ NAKT öncesi pN1a ya da cN+:

❖ Santral/medial tümör ve (grad 2-3 ya da ER/PR negatif)

❖ Premenopozal: Lateral tümör ve (grad 2-3 ya da ER/PR negatif)



Does Failure to Achieve Pathologic Complete Response with Neoadjuvant Chemotherapy Identify Node-Negative Patients Who Would Benefit from Postmastectomy Radiation or Regional Nodal Irradiation?

Angelena Crown, MD¹, Mithat Gonen, PhD², Tiana Le, BA¹, and Monica Morrow, MD¹

TABLE 2 Patients with locoregional recurrence

Age, years	Surgery	Type	cT	ypT	LVI	Differentiation	Pattern of tumor response	Degree of treatment effect	Adjuvant	Site	Time to relapse (months)	Distant	OS (months)
42	Mastectomy	TN	cT2	ypT2	No	Poor	Scattered	Minimal	None	Chest wall	13	Yes	36
33	Mastectomy	HR+/ HER2–	cT2	ypT3	No	Poor	None	None	AI	Internal mammary nodes	10	No	Alive at 15 months
34	Lumpectomy	TN	cT2	ypT1	No	Poor	Concentric	Unknown	None	Supraclavicular, axillary, and subpectoral nodes	22	No	Alive at 38 months
42	Lumpectomy	HER2+	cT1	ypT1	Yes	Moderate	Scattered	Unknown	None	Breast	22	No	Alive at 27 months
41	Mastectomy	TN	cT2	ypT2	Yes	Poor	Unknown	Unknown	Cape	Internal mammary nodes	6	Yes	8
31	Lumpectomy	TN	cT3	ypT1	No	Poor	Concentric	Marked	None	Supraclavicular nodes	14	Yes	29
61	Lumpectomy	TN	cT2	ypT1	No	Poor	Scattered	Minimal	None	Internal mammary nodes	26	Yes	Alive at 32 months
44	Lumpectomy	HR+/ HER2–	cT2	ypT1	Yes	Poor	Scattered	Marked	Tam	Chest wall	12	No	Alive at 70 months
62	Lumpectomy	TN	cT3	ypT1	No	Moderate	Scattered	Minimal	None	Internal mammary nodes	30	No	Alive at 72 months

LVI lymphovascular invasion, OS overall survival, HR hormone receptor, AI aromatase inhibitor, HER2 human epidermal growth factor 2, TN triple-negative

❖ **cT1-T3N0** ve **ypN0** (n=227)

❖ NAKT sonrası **memede ypTis-T3**

❖ PMRT ve RNI (-) / MKC sonrası WBRT +

❖ **TN** (n=82): **3-y LBR %10** (HR+%2.8, HER2+ %2.7)

❖ LVI+ %11.9 vs. LVI- %5, **p=0.10**

TN hastalarda PMRT!

LVSI p anlamlı olmasa da 2x risk↑

Diğer risk fx varlığında anlamlı

olabilir (genç yaş, LVSI+..)

NAKT → PMRT sonuçları farklı çalışmalarda heterojen

RESEARCH

Open Access

The role of postmastectomy radiation in patients with ypN0 breast cancer after neoadjuvant chemotherapy: a meta-analysis



Ke Wang^{1†}, Xiaoyan Jin^{1,2†}, Weilan Wang^{1,3†}, Xiuyan Yu¹ and Jian Huang^{1*}

12 çalışma, n=17747 hasta
 NAKT sonrası ypN0
 PMRT ile LRR↓ ancak GS →

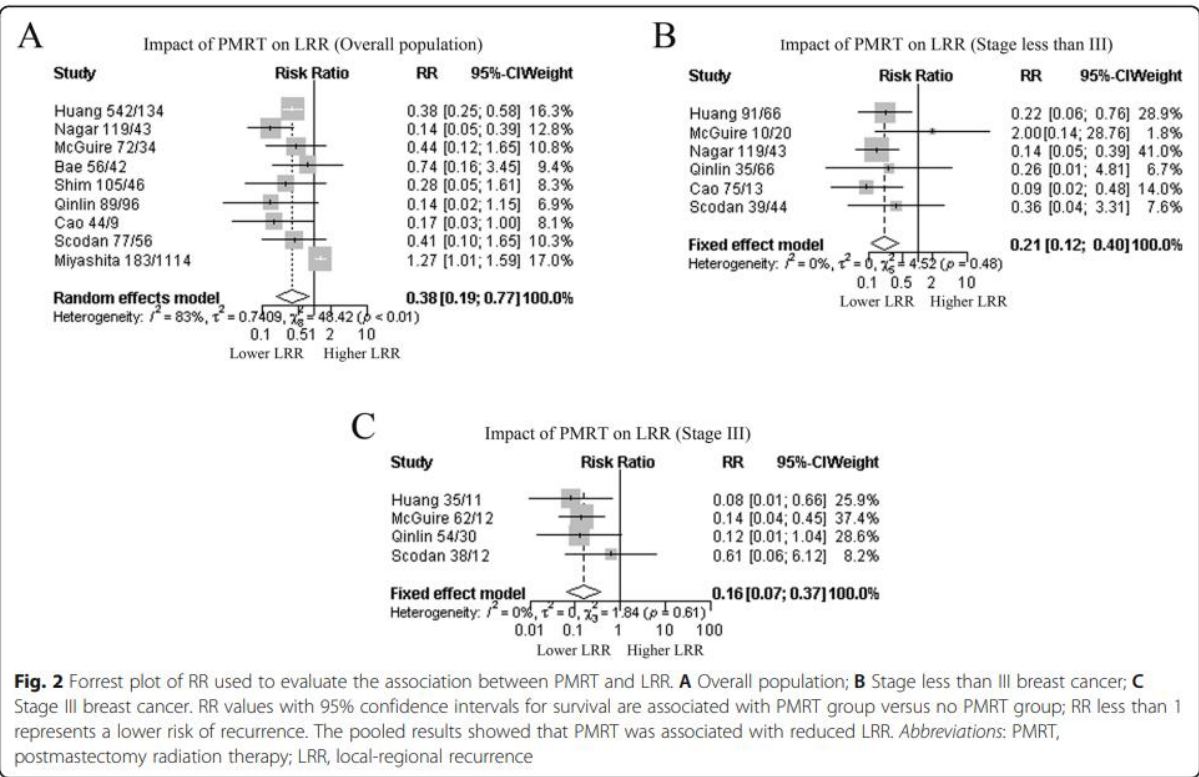


Fig. 2 Forrest plot of RR used to evaluate the association between PMRT and LRR. **A** Overall population; **B** Stage less than III breast cancer; **C** Stage III breast cancer. RR values with 95% confidence intervals for survival are associated with PMRT group versus no PMRT group; RR less than 1 represents a lower risk of recurrence. The pooled results showed that PMRT was associated with reduced LRR. Abbreviations: PMRT, postmastectomy radiation therapy; LRR, local-regional recurrence

Table 1 Selected characteristics of studies in the meta-analysis

Study	Country	Year	No. of patients	Pathological stage	Type of surgery	NAC	Outcome	Median follow up (Months)
Huang	American	2004	676	II-IV	Mastectomy	A/T,VACP	LRR,	69
McGuire	American	2007	106	I-III	Mastectomy	A/T	LRR, OS	62
Scodan	France	2010	134	II-III	Mastectomy	A/T	LRR, DFS, OS	91
Nagar	American	2011	162	II	Mastectomy	A/T	LRR	75
Bae	Korean	2012	98	0- III	Mastectomy	NR	LRR, DFS, OS	42
Shim	Korea	2013	151	II-III	Mastectomy	A/T	LRR, OS, DFS	59
Liu	American	2015	1560	II-III	Mastectomy	NR	OS	56
Rusthove-n	American	2016	3040	II-III	Mastectomy	NR	OS	41
Kantor	American	2016	8321	I-III	Mastectomy	NR	OS	69
Qinlin	China	2017	185	II-III	Mastectomy	A/T	LRR, DFS, OS	70
Cao	China	2017	88	I-III	Mastectomy	A/T	LRR, DFS, OS	67
Miyashita	Japan	2019	3226	I-III	Mastectomy	NR	LRR, DDFS, OS	> 60

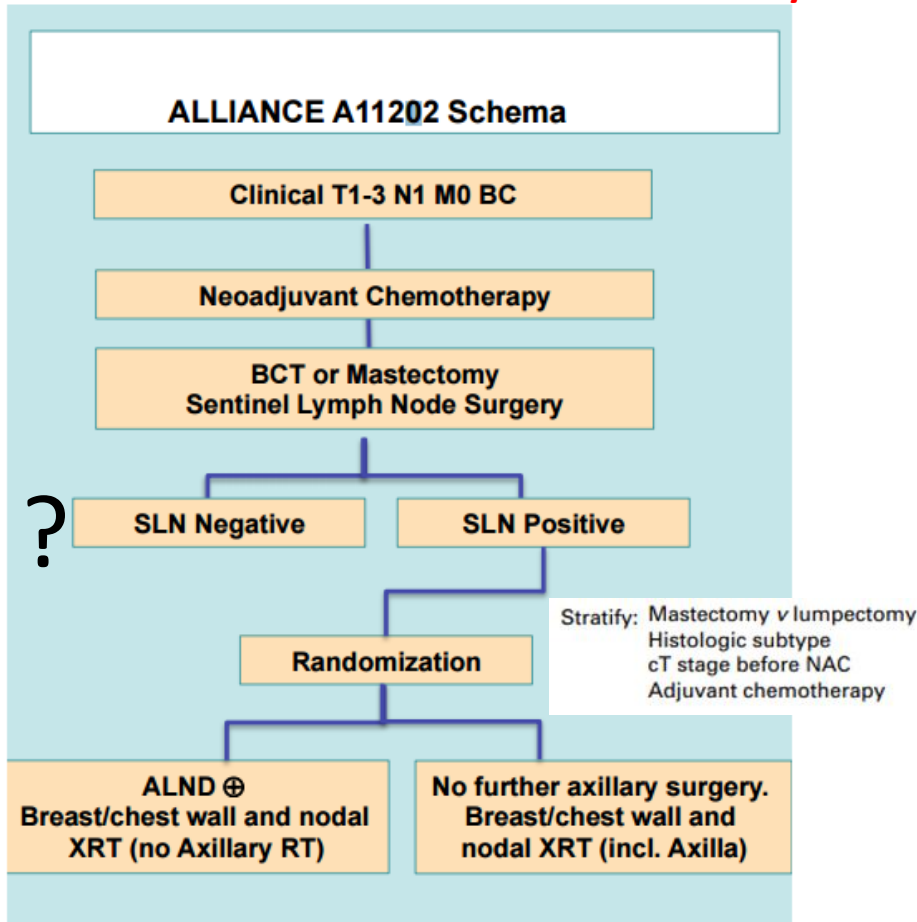
Abbreviations: NAC Neoadjuvant chemotherapy, A Anthracycline-based chemotherapy, A/T Anthracycline- or taxane- based chemotherapy, NR No report, LRR Local-regional recurrence, DFS Disease-free survival, OS Overall survival

A Randomized Phase III Trial Comparing Axillary Lymph Node Dissection to Axillary Radiation in Breast Cancer Patients (cT1-3 N1) Who Have Positive Sentinel Lymph Node Disease After Neoadjuvant Chemotherapy

A Randomized Phase III Clinical Trial Evaluating Post-Mastectomy Chestwall and Regional Nodal XRT and Post-Lumpectomy Regional Nodal XRT in Patients With Positive Axillary Nodes Before Neoadjuvant Chemotherapy Who Convert to Pathologically Negative Axillary Nodes After Neoadjuvant Chemotherapy

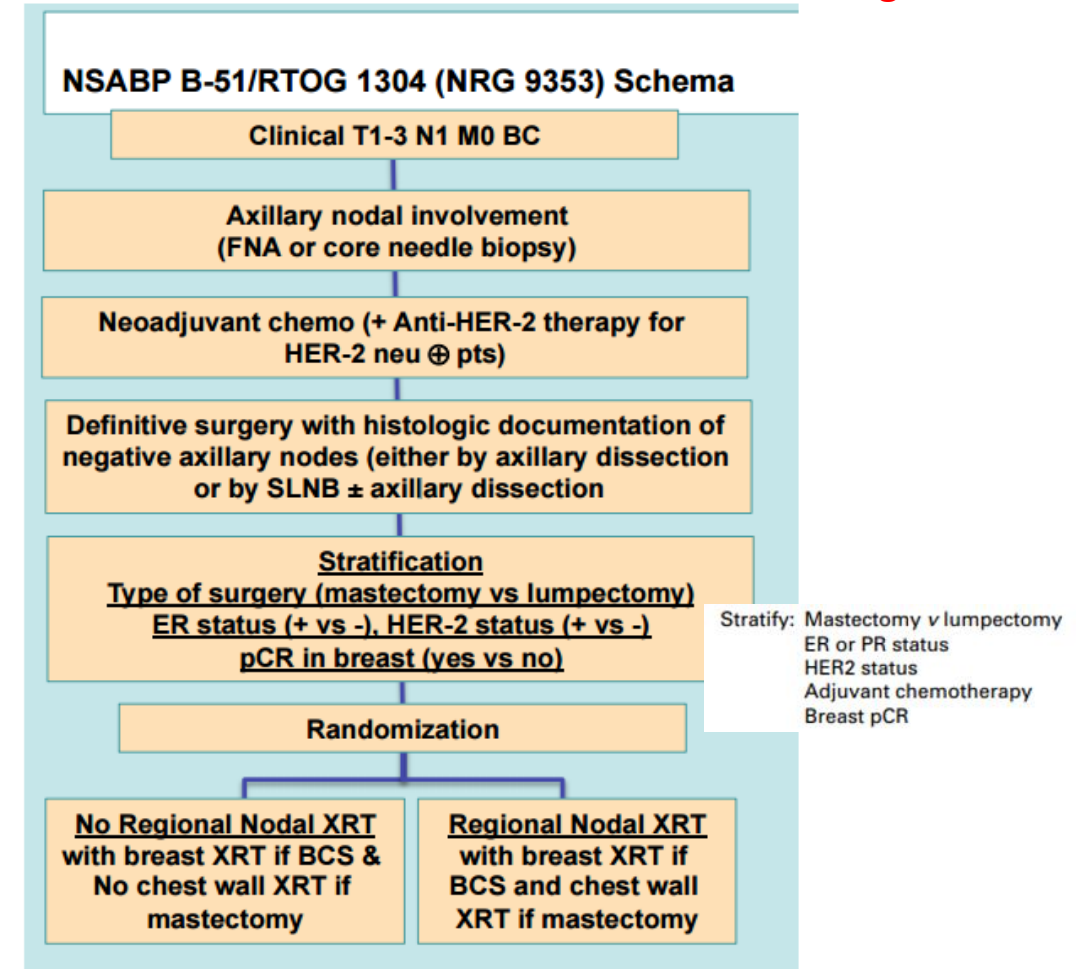
ALLIANCE A11202 Schema

January 2024



NSABP B-51/RTOG 1304 Schema

August 2028



SPECIAL ARTICLE

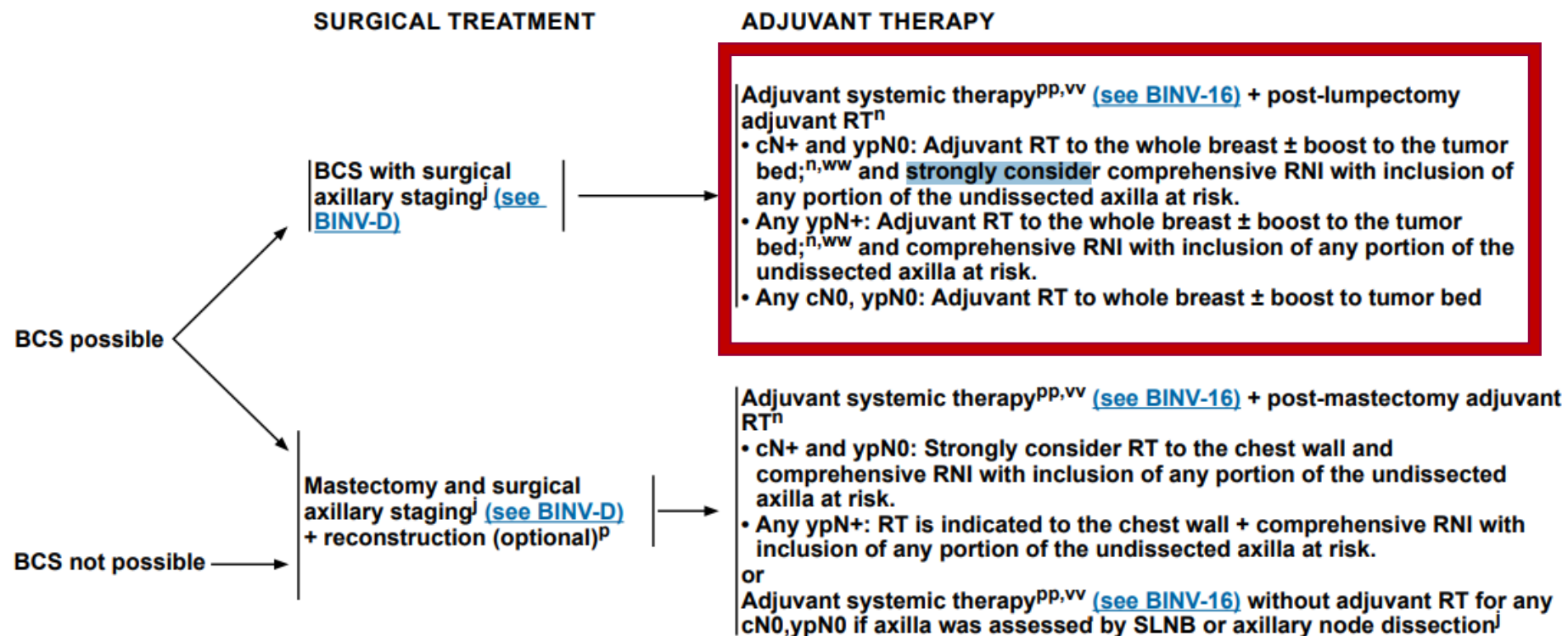
Customizing local and systemic therapies for women with early breast cancer: the St. Gallen International Consensus Guidelines for treatment of early breast cancer 2021

H. J. Burstein^{1*†}, G. Curigliano^{2*†}, B. Thürlimann³, W. P. Weber⁴, P. Poortmans⁵, M. M. Regan¹, H. J. Senn⁶, E. P. Winer¹
& M. Gnant⁷, Panelists of the St Gallen Consensus Conference[†]

- ❖ T2 klinik N0: triple negatif ya da HER2+ NAKT → pCR: RNI önerilmez
- ❖ Klinik N+ aksilla NAKT pCR → RNI önerilmektedir

St. Gallen 2021:
cN+ → pCR olsa da RNI önerilir

**OPERABLE DISEASE:
SURGICAL TREATMENT AND ADJUVANT THERAPY AFTER PREOPERATIVE SYSTEMIC TREATMENT^{uu}**



^j See Considerations for Surgical Axillary Staging (BINV-D).

^p See Principles of Breast Reconstruction Following Surgery (BINV-H).

ⁿ See Principles of Radiation Therapy (BINV-I).

^{pp} See Principles of Preoperative Systemic Therapy (BINV-M).

^{uu} The accurate assessment of in-breast tumor or regional lymph node response to preoperative systemic therapy is difficult, and should include physical examination and performance of imaging studies (mammogram and/or breast ultrasound and/or breast MRI) that were abnormal at the time of initial tumor staging. Selection of imaging methods prior to surgery should be determined by the multidisciplinary team.

^{vv} Complete planned chemotherapy regimen course if not completed preoperatively.

^{ww} Strongly consider RT boost for high-risk features (eg, high-grade disease, age <50 years).

Triple negatif meme kanserinde NAKT sonrası RT

MKC sonrası tüm hastalara WBRT

Tanıda cT1-2 N0 → NAKT sonrası ypT0/Tis N0

****PMRT ya da RNI ∅*

Tanıda cN0- →NAKT sonrası yp N0 RNI ∅

Klinik N+ aksilla NAKT pCR →RNI önerilmektedir

*****YÜKSEK RİSK preoperatif Evre II – PMRT-MDACC-UC Athena Network önerileri**

➤ *>2 cm rezidüel primer, <40 y, LVSI, ECE, yakın cerrahi sınır, >20% + LN , ileri klinik ve patolojik evre ve*

TNBC

➤ *Düşük risk preoperatif Evre II – risk/yarar*

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- ❖ Triple negatif meme kanserinde prognoz ve tedavi yanıtı
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- ❖ **Triple negatif meme kanserinde adjuvan RT(MKC, Mastektomi)**
- ❖ Triple negatif meme kanserinde boost tedavi
- ❖ Triple negatif meme kanserinde hipofraksiyone RT
- ❖ Triple negatif meme kanserinde APBI
- ❖ Sonuç ve Öneriler

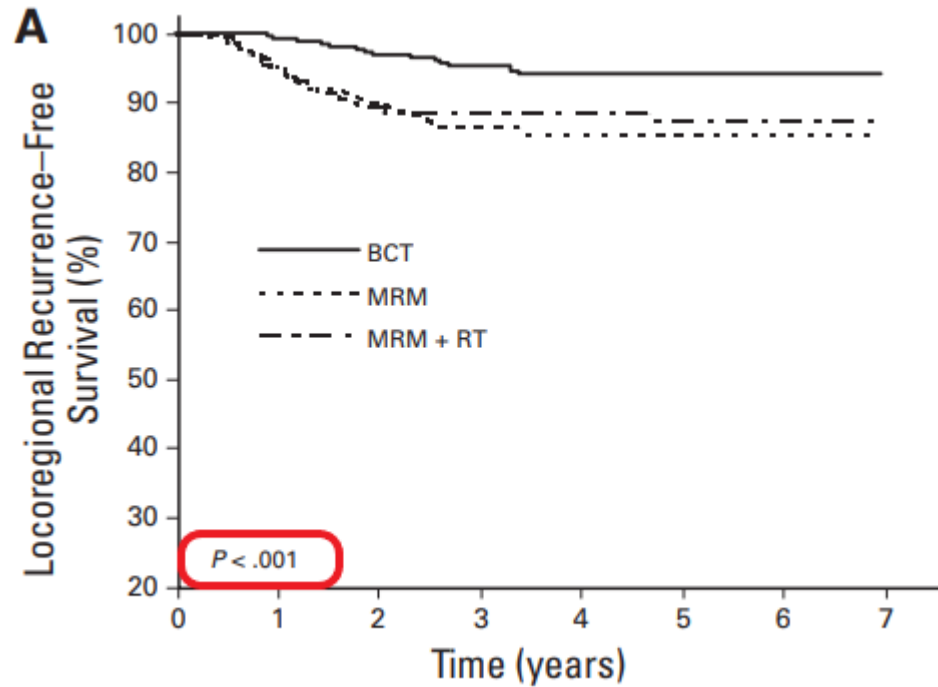
TNМК'de erken evrelerde MKT vs Mastektomi

Study ID, country/region	Study design	Study size, TNBC cases	Age (years)	Follow-up time (years)	Stage of disease	Treatment	Survival estimates
Abdulkarim et al, ³⁴ Canada	Retrospective cohort study	768, 468 (T1-2N0)	Median: 56	Median: 7.2	T1-3, N0-2	BCT vs M MKC>M	Five-year LRR-free survival for T1-2N0: 96% vs 90% (P=0.022) OS: NR
Wang et al, ³⁵ China	Meta-analysis (one RCT and the remaining are retrospective observational studies)	4,364, 962 (stages I-II)	Median: 55	Median: 5.8	0-IV	BCT vs M MKC>M	ILRR: 16.9% vs 21.9% (P<0.0001) DM: 23.6% vs 34.4% (P<0.00001)
Zumsteg et al, ³⁶ USA	Retrospective cohort study	646	Median: 59	Median: 6.5	T1-2, N0	BCT vs M MKC=M	5-year LRR: 4.2% vs 5.4% (P>0.05) 5-year DM: 8.2% vs 8.1% (P=0.92) OS: P=0.762
Bhoo-Pathy et al, ³⁷ Asia	Retrospective cohort study	1,138, 775 (T1-2N0-1M0)	Median: 53	Median: 3.6	T1-4, N0-3	BCT vs M MKC=M	5-year RSR: 90.8% vs 94.7% (P>0.05)
Ly et al, ³⁸ USA	Retrospective cohort study	62	NR	Median: 3.3	T1-2, N0-1	BCT vs M MKC>M	7-year LRR: 19.7% vs 17.5% (P=0.465) 7-year RFS: 77.6% vs 60.2% (P=0.193) 7-year DM: 2.63% vs 22.4% (P<0.0001)
van Maaren et al, ³⁹ the Netherlands	Retrospective cohort study	37,207 (all types)	NR	Median: 11.4	T1-2N0-1M0	BCT vs M MKC>M	10-year OS: 77% vs 60% (P<0.05)

Erken evre TNМК için **MKT>Mastektomi** veriler mevcut: *MKT ile lokal-bölgesel rekürrens ~%6* ↓

Increased Risk of Locoregional Recurrence for Women With T1-2N0 Triple-Negative Breast Cancer Treated With Modified Radical Mastectomy Without Adjuvant Radiation Therapy Compared With Breast-Conserving Therapy

Bassam S. Abdulkarim, Julie Cuartero, John Hanson, Jean Deschênes, David Lesniak, and Siham Sabri



T1-2No triple negatif meme kanseri, n=768

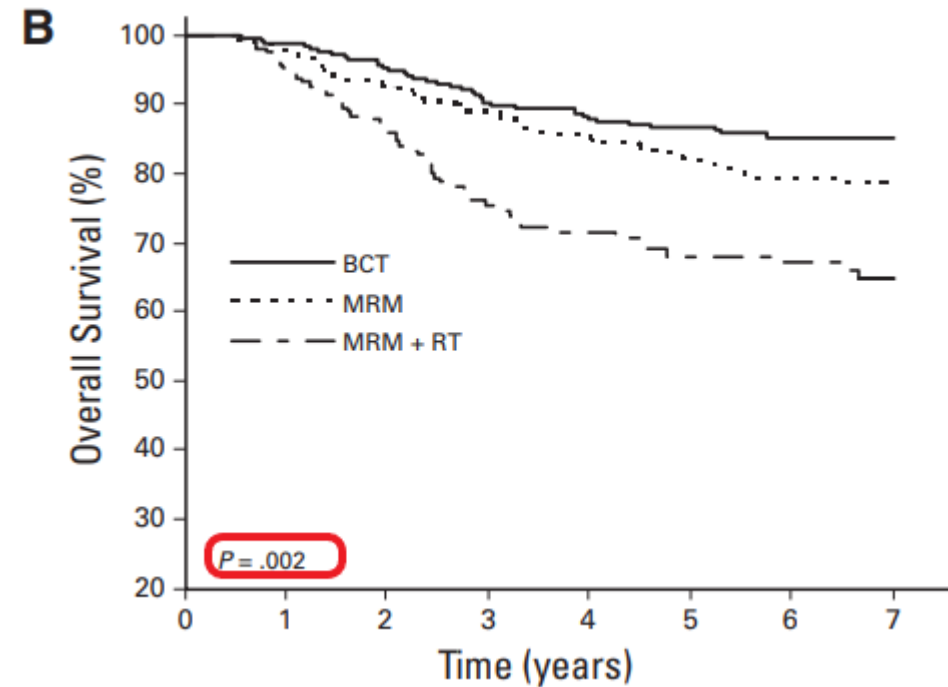
MRM vs MKC adj RT

Medyan takip 7.2 yıl; LRR %10

5y LRR olmadan sağ kalım %96 vs %90 (p=0.027) (MKC vs MRM)

Multivaryan analiz: MRM (vs MKC), LVSI, LN+ ile LRR riski ↑

Adj KT ile LRR ↓



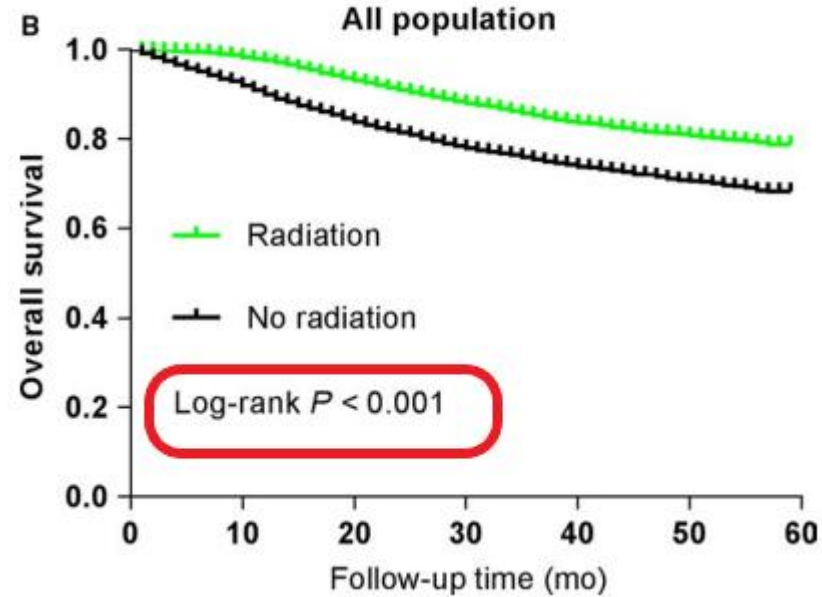
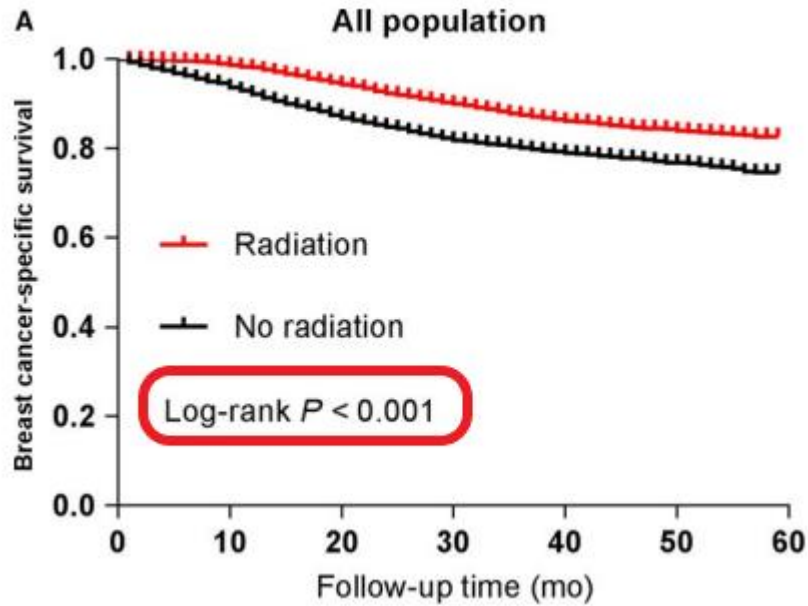
MKC+RT > Mastektomi

**SEER database N=22802 meme ca,
10905 RT+**

TNMK'de adjuvan RT ile GS ve BCSS ↑

Radiotherapy after surgery has significant survival benefits for patients with triple-negative breast cancer

Yi Yao  | Yuxin Chu  | Bin Xu | Qinyong Hu | Qibin Song



TNМК'de MKC sonrası adjuvan RT

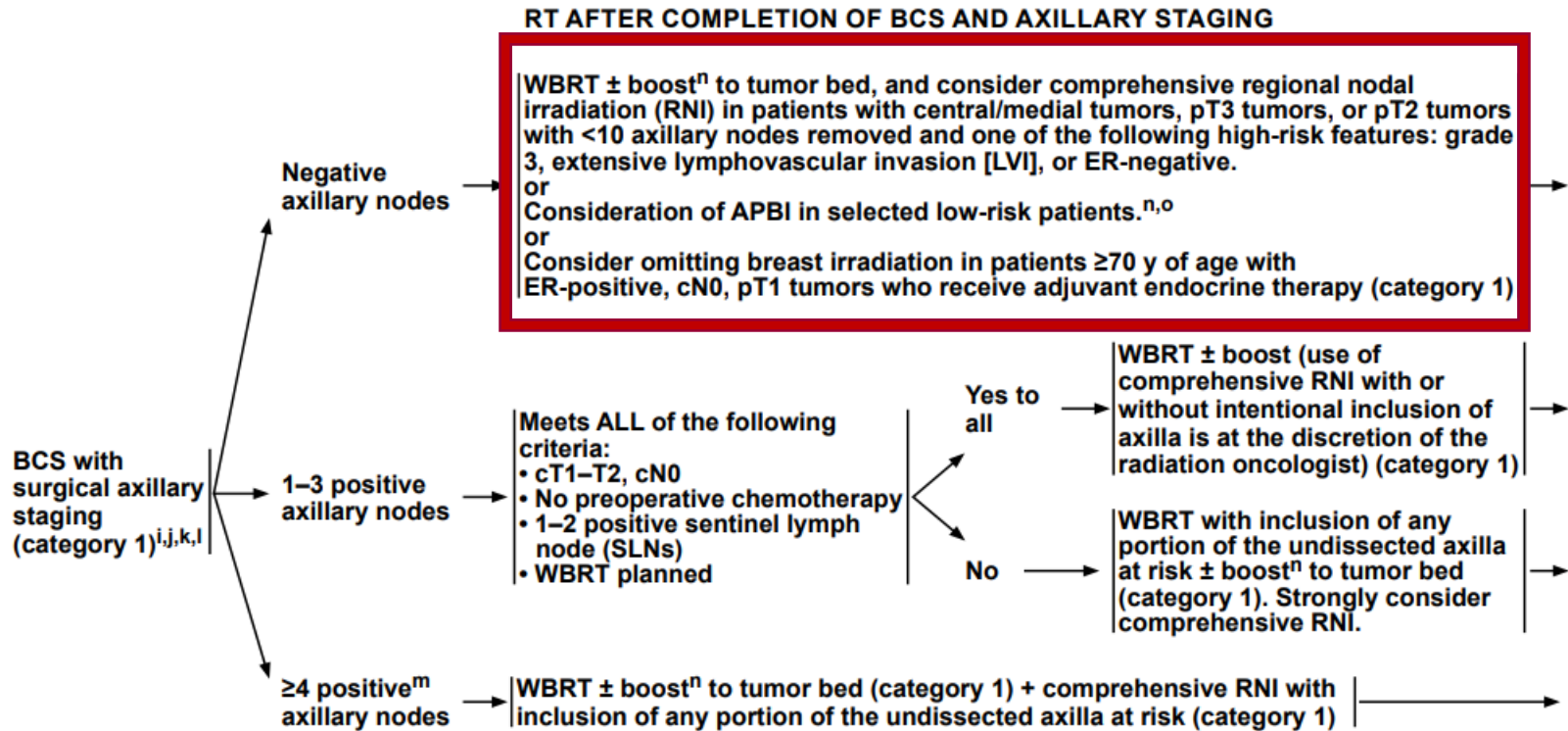


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NCCN Guidelines Version 2.2022
Invasive Breast Cancer

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**LOCOREGIONAL TREATMENT OF cT1–3, cN0 or cN+, M0 DISEASE:^a
BREAST-CONSERVING SURGERY (BCS) FOLLOWED BY RT**



- ❖ ER+, ≥70y cN0, pT1 adjuvan endokrin tedavi alabilecek hastalarda WBRT omit edilebilir.
- ❖ Ancak tek başına klinik ve patolojik özellikler farklı IBR oranlarına neden olur
- ❖ Multigene assay, RNA gene assay: «düşük risk» lüminal hastaları belirleyebilir
- ❖ *Triple negatif meme kanserinde MKC sonrası adj RT önerilir!*

Role of postmastectomy radiotherapy in early-stage (T1–2N0–1M0) triple-negative breast cancer: a systematic review

PMRT ile yüksek risk fx olan hastalarda LRR ↓

(CS+, LN+, tm boyutu!)

GS katkısı???

Table 2 Mastectomy versus mastectomy + PMRT

Study ID, country/region	Study design	Study size, TNBC cases	Age (years)	Follow-up, time (years)	Stage of disease	Treatment	Survival estimates
*Chen et al, ⁴⁰ China	Retrospective cohort study	553, 416 (T1–2N0–1M0)	Median: 52	Median: 5.4	T1–4, N0–3	M + PMRT vs M	DFS: HR 16.41; 95% CI, 1.61–167.11; P=0.018
*Kong and Hong, ⁴¹ Korea	Retrospective cohort study	14	Median: 48.6	Median: 7	T1–2N1	M + PMRT vs M	NR
*Gabos et al, ⁴² Canada	Retrospective cohort study	74	NR	Median: 4.8	NR	M + PMRT vs M	NR
*Wang et al, ⁴³ China	RCT	681	NR	Median: 7.2	T1–2, N0–3	M + PMRT vs M	Five-year RFS: 88.3% vs 74.6% (P=0.02) Five-year OS: 90.4% vs 78.7% (P=0.03) 10-year LRR: 6.0%
*Jagsi et al, ⁴⁴ USA	Retrospective cohort study	NR	Median: 64	Median: 8.3	T1–3N0	M	10-year LRR: 7.8% DM: 11.7% 10-year BCSS: 88.4% 10-year OS: 74.7%
*Truong et al, ⁴⁵ Canada	Retrospective cohort study	NR	Median: 62	Median: 7	T1–2N0	BCS and M	10-year LRR: 7.8% DM: 11.7% 10-year BCSS: 88.4% 10-year OS: 74.7%
*Shen et al, ⁴⁶ China	Retrospective cohort study	167	Median: 50	Median: 6.1	T1–2N1	M + PMRT vs M	LRR: 34% vs 19.2%

Abbreviations: M, mastectomy; PMRT, postmastectomy radiotherapy; TNBC, triple-negative breast cancer; DFS, disease-free survival; HR, hazard ratio; CI, confidence interval; NR, not reported; RCT, randomized controlled trial; RFS, relapse-free survival; OS, overall survival; LRR, locoregional recurrence; BCS, breast-conserving surgery; DM, distant metastasis; BCSS, breast cancer-specific survival.

PMRT DFS ↑

PMRT ↓ LRR TNMK

PMRT ↓ LRR TNMK

PMRT 5y RFS ve GS ↑ TNMK

PMRT gerekli

PMRT gerekli

PMRT ek katkıØ

Bu çalışmada ~%95 hasta KT +

Erken evre TNMK'de PMRT?



Phase III randomised trial

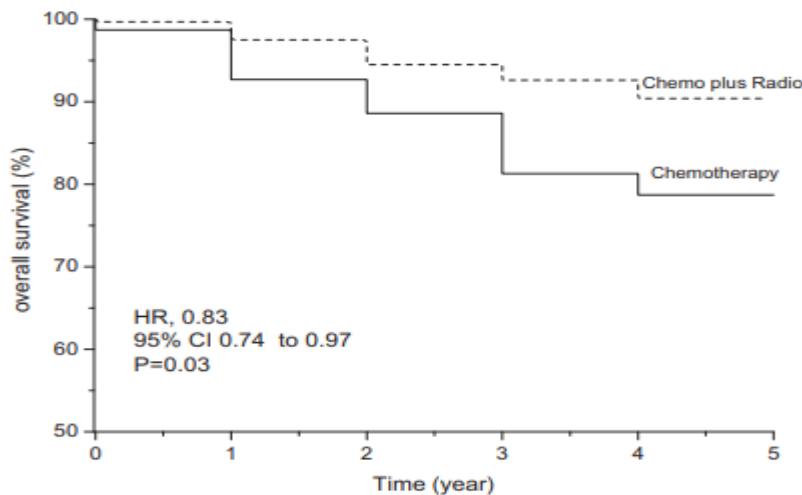
Adjuvant chemotherapy and radiotherapy in triple-negative breast carcinoma: A prospective randomized controlled multi-center trial

Jianhua Wang^{a,1}, Mei Shi^{a,*,1}, Rui Ling^{b,*,1}, Yuesheng Xia^{a,1}, Shanquan Luo^a, Xuehai Fu^a, Feng Xiao^a, Jianping Li^a, Xiaoli Long^a, Jianguo Wang^c, Zengxia Hou^d, Yunxia Chen^e, Bin Zhou^a, Man Xu^a

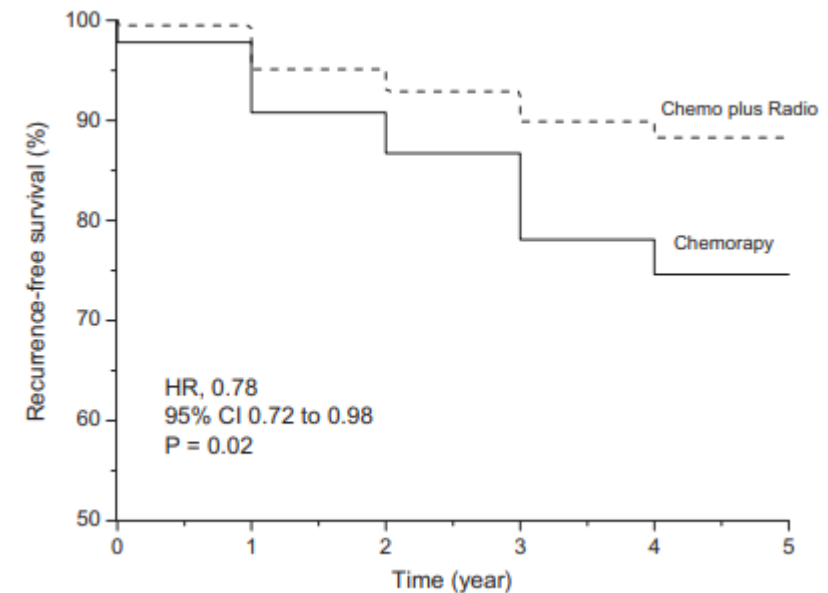
^aDepartment of Radiation Oncology; ^bDepartment of Breast Surgery, Fourth Military Medical University, Xi'an; ^cDepartment of Radiation Oncology, Shanxi Province Tumor Hospital, Taiyuan; ^dMedical Technical Group, Second Military Medical University, Shanghai; and ^eDepartment of Radiation Oncology, Fifth Hospital, Shanxi Province, China

- ❖ **Prospektif faz III, Evre I-II N=681 TNMK, 2001-2006**
- ❖ **N=315 KT vs N=366 KT+PMRT; N0 82%, N1 16%**
- ❖ **Mastektomi → adjuvant KT (FEC ya da CMF)**
- ❖ **Medyan takip: : 86.5 ay**

5y OS: - PMRT 79% + PMRT 90% p=0.03



5y RFS: - PMRT 75% +PMRT 88% p=0.02





Post-mastectomy Radiation Therapy in Triple-Negative Breast Cancer Patients: Analysis of the BEATRICE Trial

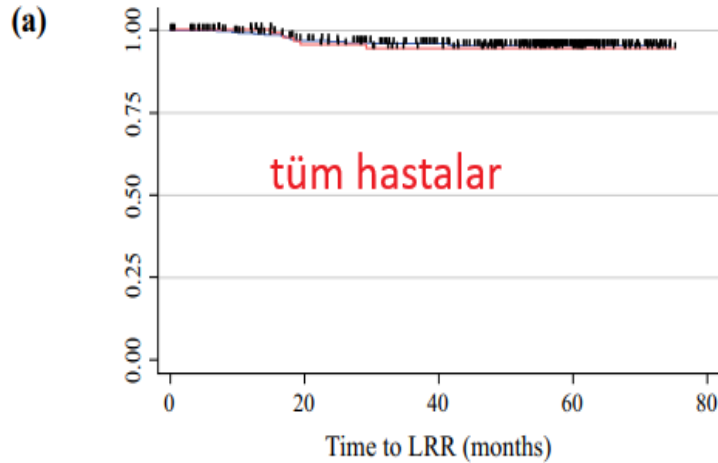
Majd Kayali, MD¹, Joseph Abi Jaoude, MD¹, Mohammed Mohammed, MD¹, Joanne Khabsa, MPH³, Arafat Tfayli, MD⁴, Philip Poortmans, MD, PhD^{5,6}, and Youssef H. Zeidan, MD, PhD^{1,2}

Modern ST fark eski çalışmalar kadar belirgin değil
N1 hastalığıdaki fark anlamlı \emptyset
Yeni prospektif çalışmalar gerekli!

BEATRICE prospektif faz III çalışmanın retrospektif analizi:

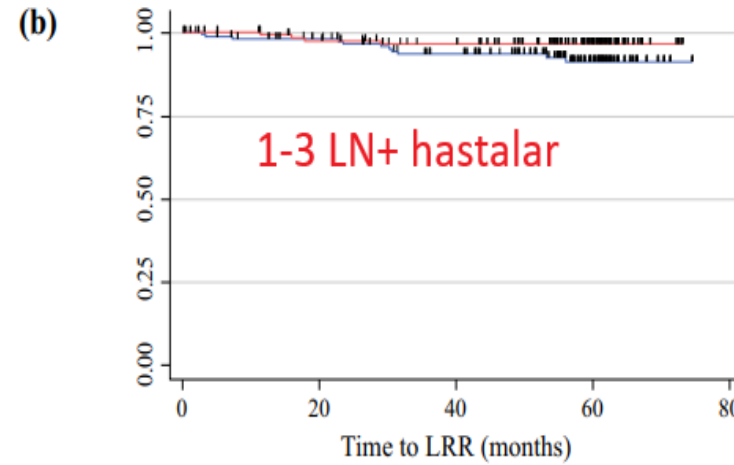
**N=940 (%38.2 PMRT + & %61.8 PMRT -)
Medyan takip=5yıl**

- ❖ N0 → LRR arası fark \emptyset
- ❖ N1 → %96 v %91 (HR=0.46)
- ❖ N2 → PMRT ile 5y LRR-siz sağkalım %76



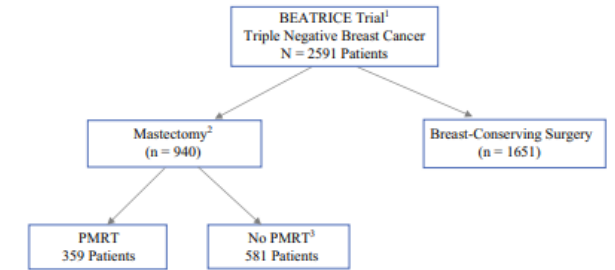
Number at risk	0	20	40	60	80
No radiotherapy	395	350	307	135	0
Radiotherapy	99	87	73	38	0

— No radiotherapy — Radiotherapy



Number at risk	0	20	40	60	80
No radiotherapy	156	136	116	49	0
Radiotherapy	119	109	98	49	0

— No radiotherapy — Radiotherapy

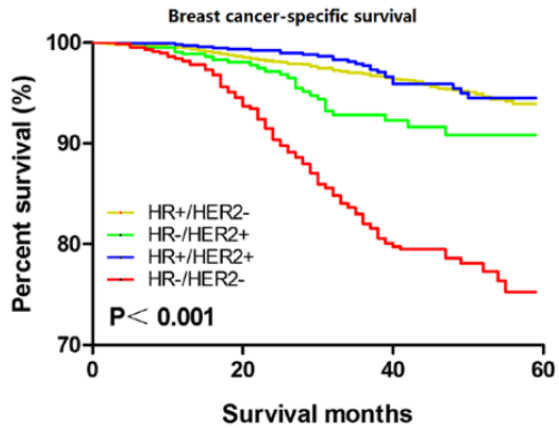


Flow diagram of the study cohort. ¹BEATRICE Trial: Bevacizumab Containing Adjuvant Therapy Trial. ²Mastectomy included radical mastectomy, modified radical mastectomy, and simple mastectomy. ³PMRT: Post-Mastectomy Radiation Therapy

T1-2N1M0 triple-negative breast cancer patients from the SEER database showed potential benefit from post-mastectomy radiotherapy

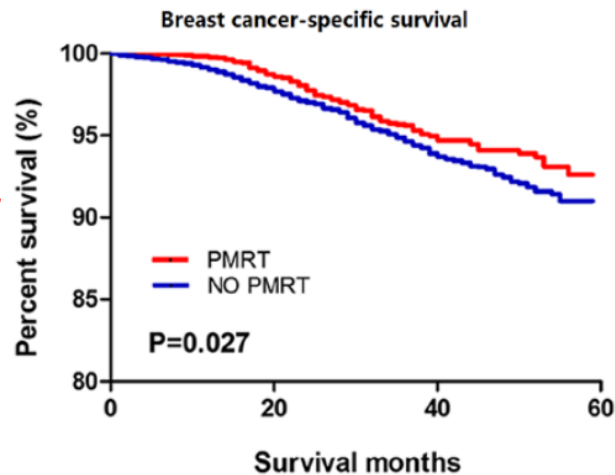
XUEYING WANG^{1*}, YINGYING XU^{2*}, SHANSHAN GUO^{1,3*}, JIAXIN ZHANG¹, MASANOBU ABE⁴, HAOSHENG TAN¹, SHAOJUN WANG², PING CHEN¹ and LIANG ZONG¹

¹Department of General Surgery, Northern Jiangsu People's Hospital; ²Department of General Surgery, Yizhen People's Hospital, Yangzhou University, Yangzhou, Jiangsu 225001; ³Department of Oncology, Graduate School of Medicine, Dalian Medical University, Dalian, Liaoning 116044, P.R. China; ⁴Division for Health Service Promotion, University of Tokyo Hospital, Tokyo 113-0033, Japan

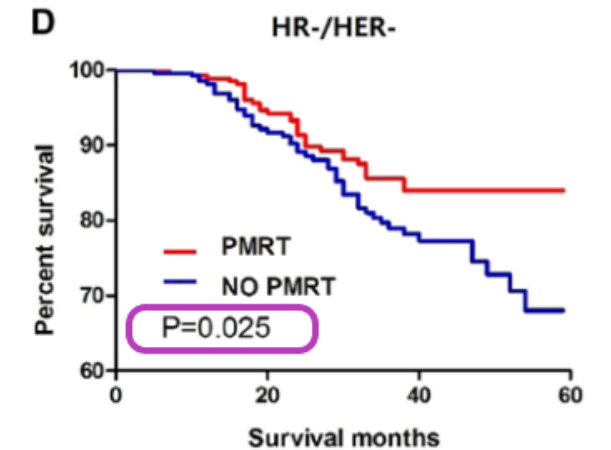
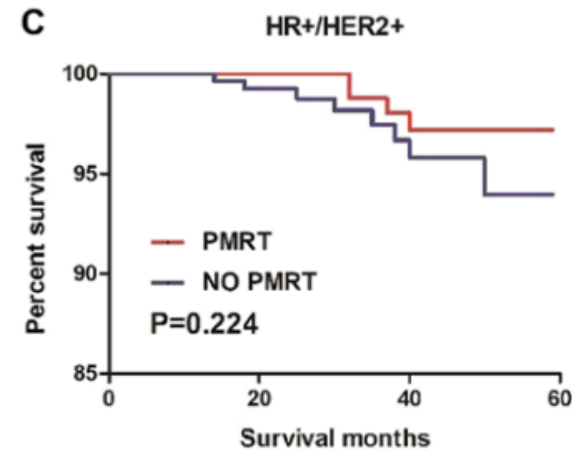
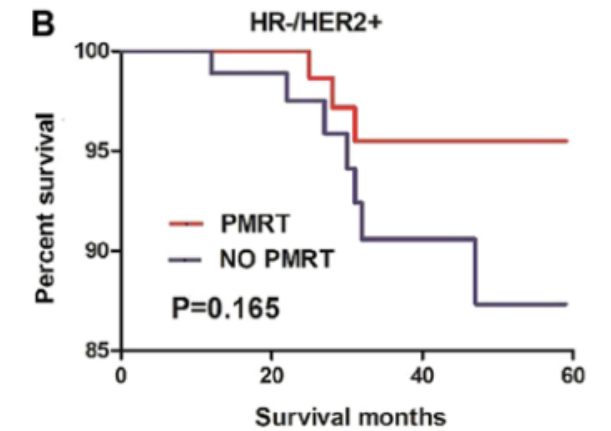
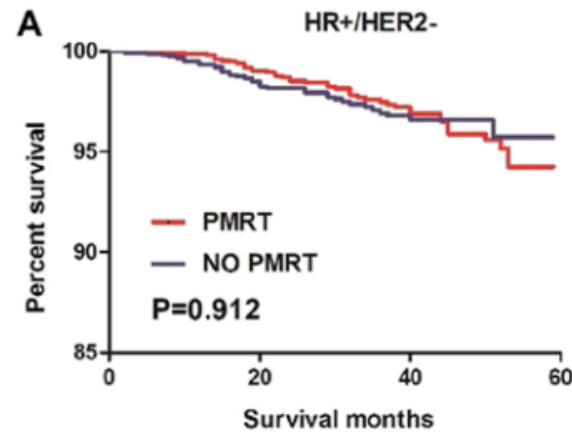


TNMK en kötü prognozlu

Tüm grupta PMRT ile BCSS ↑



- ❖ T1-2N1M0 (n=7466)
- ❖ SEER veri tabanı
- ❖ Mastektomi vs. Mastektomi + PMRT
- ❖ TN (n=887) meme kanserlerinde PMRT ile BCSS ↑ (p=0.025)
- ❖ PSM analizinde sadece triple negatifte anlamlı



SPECIAL ARTICLE

Customizing local and systemic therapies for women with early breast cancer: the St. Gallen International Consensus Guidelines for treatment of early breast cancer 2021

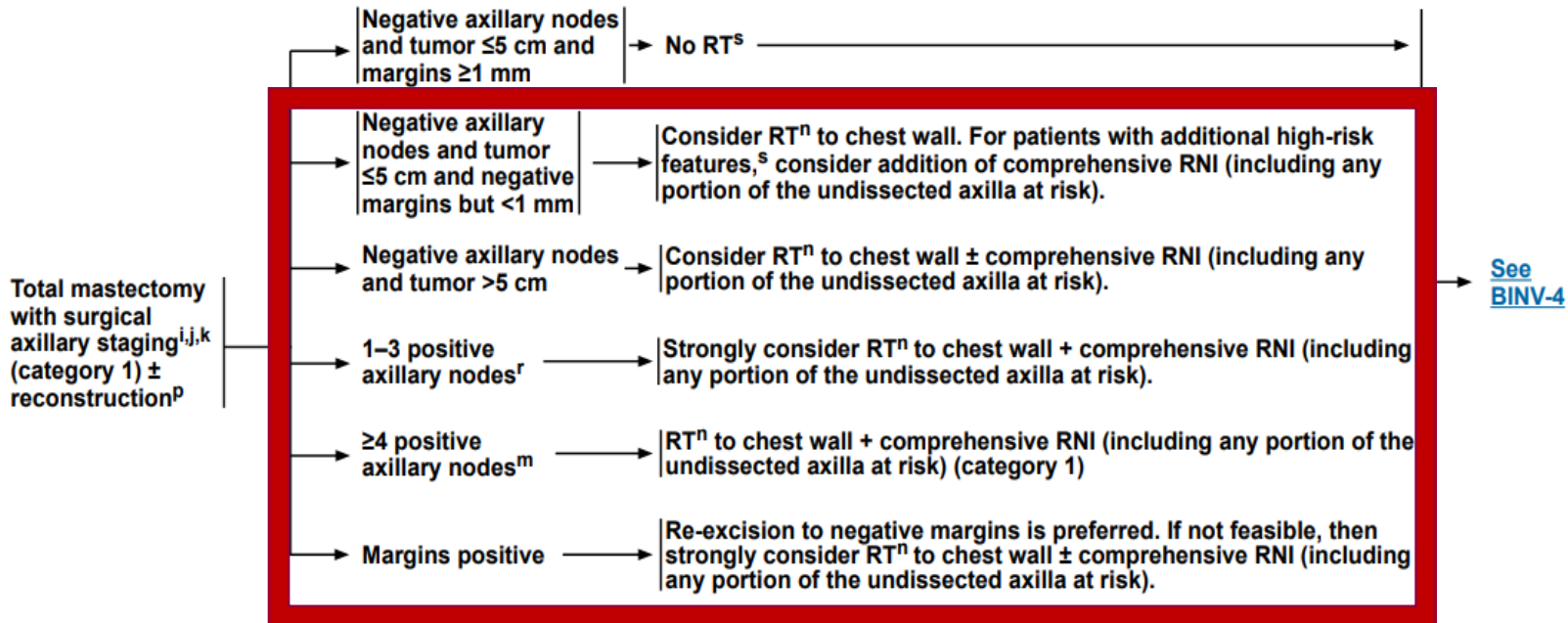
H. J. Burstein^{1*†}, G. Curigliano^{2*†}, B. Thürlimann³, W. P. Weber⁴, P. Poortmans⁵, M. M. Regan¹, H. J. Senn⁶, E. P. Winer¹
& M. Gnant⁷, Panelists of the St Gallen Consensus Conference[†]

- ❖ T1-2N1M0 meme kanserlerinde PMRT rutin olarak önerilmemelidir.
- ❖ Olumsuz risk faktörleri olan olgularda yararlı olabilir.
- ❖ Yüksek risk faktörleri:
 - ❖ **<40-45 yaş, grad 3, HER2+, triple negatif, LVI+**

TNMG'de PMRT sonrası adjuvan RT

LOCOREGIONAL TREATMENT OF cT1-3, cN0 or cN+, M0 DISEASE:^{a,q}
MASTECTOMY FOLLOWED BY RT

RT AFTER COMPLETION OF MASTECTOMY AND AXILLARY STAGING



- ❖ CS <1mm, ≤5 cm, LN (-)
- ❖ >5 cm tm, LN (-)
- ❖ ≥4 LN metastazı
- ❖ Fasya-cilt tutulumu (T4)
- ❖ T1-2, 1-3LN+
- ❖ *Yüksek riskli N0*
 - ❖ *Medial/santral tm ya da*
 - ❖ *T≥2 cm ve <10 ALND olup 3 kriterden en az bir tanesi mevcut*
- ❖ *Grad 3 tm*
- ❖ *ER-*
- ❖ *LVI*

^s Postmastectomy RT may be considered for patients with multiple high-risk recurrence factors, including central/medial tumors or tumors ≥2 cm with <10 axillary nodes removed and at least one of the following: grade 3, ER-negative, or LVI.

Regional Nodal Irradiation (RNI): Improved Local Regional Control, Distant DFS, DFS

Trial	n	% N1	Local Reg. Recurrence			Distant Disease Free			Disease Free Surv.		
			No RNI	RNI	p	No RNI	RNI	p	No RNI	RNI	p
NCIC MA.20	1832	85	6.8%	4.3%	.009	82.4%	86.3%	.03	77%	82%	.01
EORTC 22922	4004	43	9.5%	8.3%		75%	78%	.02	69.1%	72.1%	.04

↓ 1.9%

↑ 3.4 %

↑ 5 %

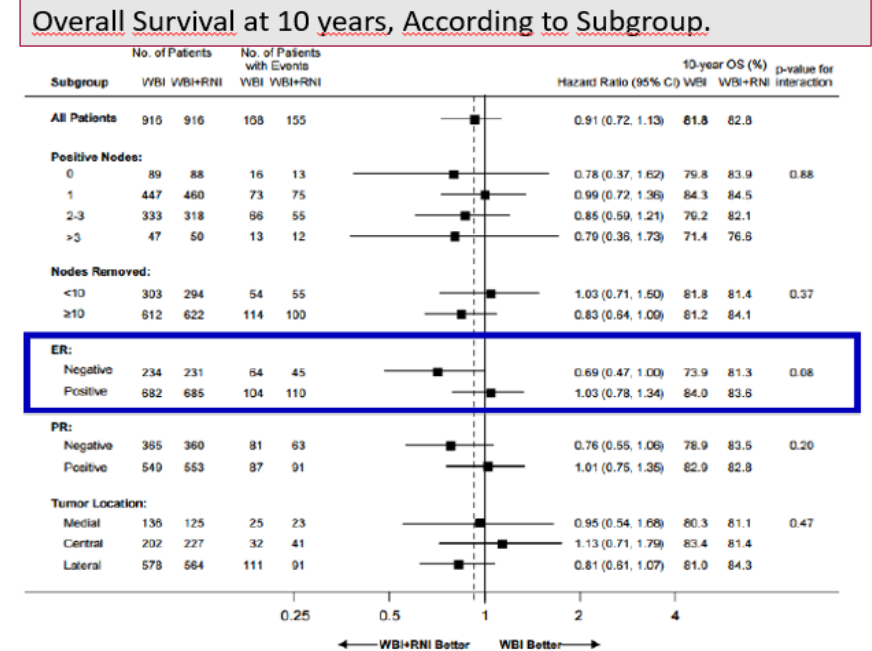
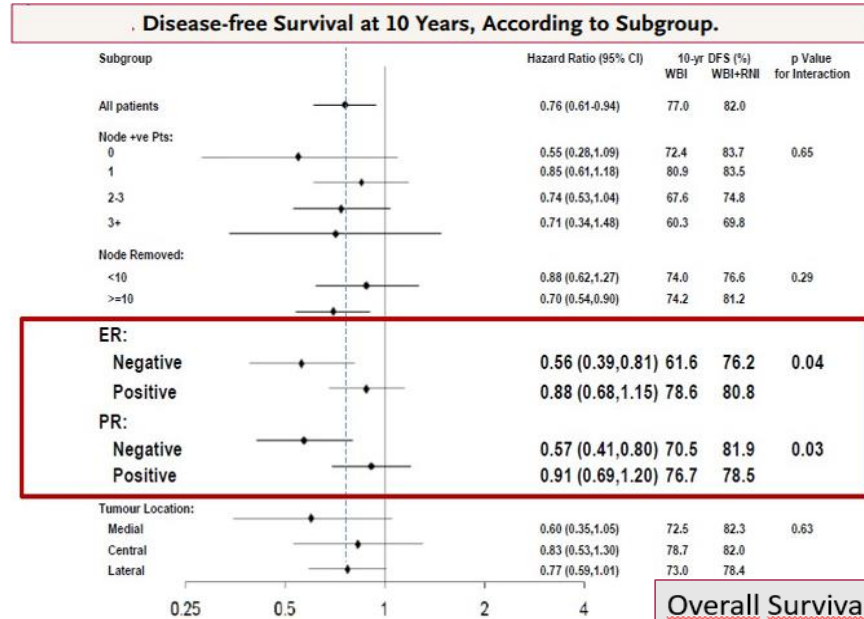
Whelan et al. NEJM 2015;373(19):1878-1879

Poortmans et al, NEJM 373: (4):317-327 2015

MA-20: Preplanned Subset Analysis

10 yıllık sonuçlar	TMI	TMI + BNI	p değeri
İzole LRR	%6.8	%4.3	0.009
DFS	%77	%82	0.01
LRFS	%92.2	%95.2	0.009
DMFS	%82.4	%86.3	0.03
OS	%81.8	%82.8	0.38

Etki ER- PR- subgrupta en fazla



Whelan, T NEJM 2015;373:307-16

Triple negatif meme kanserinde adj RT

Erken evre TN meme kanserlerinde

MKT \geq Mastektomi

MKC sonrası WBRT

PMRT: Hasta bazında karar verilmelidir

Sunum Planı

- ❖ Triple negatif meme kanserinde prognoz ve tedavi yanıtı
- ❖ Triple negatif meme kanserinde NAKT sonrası RT (MKC, Mastektomi)
- ❖ Triple negatif meme kanserinde adjuvan RT(MKC, Mastektomi)
- ❖ **Triple negatif meme kanserinde boost tedavi**
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- ❖ Triple negatif meme kanserinde APBI
- ❖ Sonuç ve Öneriler

MKC Sonrası Rekürrens Paterni

❖ **TN:** Sıklıkla gerçek rekürrens

❖ Lumpektomi kavitesinin 3 cm içinde

❖ Rezidü invaziv hastalık riski mevcut ↑

❖ **HR+:** Sıklıkla ikinci primer

❖ Primer tümör yatağından uzakta

(*Cancer J* 2021;27: 32–40)

Local Treatment of Triple-Negative Breast Cancer

Melanie Machiels, MD, PhD,† Orit Kaidar-Person, MD,‡
Isabel T. Rubio, MD, PhD,§ and Philip Poortmans, MD, PhD*†*

Rationale and Effect of a Tumor Bed Boost in the Framework of BCT for TNBC Patients

Study	No. Patients		Type of Study	Endpoint	Question	Answer
	TNBC					
Fastner et al. (2016) ⁸¹	71		Observational	OS/LRR at 5 y	Survival and LRR difference between TNBC subtypes classified as 5-marker negative and core basal?	OS: no (39 vs. 32%; $P = 0.40$) LRR: yes (15 vs. 32%; $P < 0.001$)
Sioshansi et al. (2012) ⁸²	46		Observational	NA	Analysis of re-excision specimens, to assess residual tumor cell	TNBC significantly correlated with higher residual disease (51% vs. 30% other subtypes)

OS, overall survival.

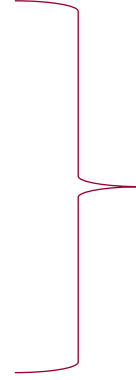
RT boost-ASTRO kılavuzu 2018

❖ ≤50 y tüm gradlarda her hastaya

❖ 51-70y

❖ Yüksek gradlı ya da

❖ CS (+)



Boost tedavi düşünülmelidir

❖ >70 y HR+, düşük-orta grad, CS (≥2mm): boost tedavi verilmeyebilir

❖ Bu koşulların dışında hasta bazında karar verilmelidir

Practical Radiation Oncology (2018)

practical radiation oncology
pro

**Radiation Therapy for the Whole Breast:
An American Society for Radiation
Oncology (ASTRO) Evidence-Based
Guideline**

SPECIAL ARTICLE

Customizing local and systemic therapies for women with early breast cancer: the St. Gallen International Consensus Guidelines for treatment of early breast cancer 2021

H. J. Burstein^{1†}, G. Curigliano^{2†}, B. Thürlimann³, W. P. Weber⁴, P. Poortmans⁵, M. M. Regan¹, H. J. Senn⁶, E. P. Winer¹ & M. Gnant⁷, Panelists of the St Gallen Consensus Conference[†]

❖ **Boost önerilir:**

- ❖ Yüksek gradlı (Grad 3)
- ❖ EIC (extensive intraduktal komponent)
- ❖ **TNMK**
- ❖ HER2+
- ❖ <50y

Triple negatif meme kanserinde boost

*Grad 3, EIC+, TN/HER2+ ya da <50 yaş
olgularda uygulanmalı!*

Sunum Planı

- ❖ Triple negatif meme kanserinde prognoz ve tedavi yanıtı
- ❖ Triple negatif meme kanserinde NAKT sonrası RT (MKC, Mastektomi)
- ❖ Triple negatif meme kanserinde adjuvan RT(MKC, Mastektomi)
- ❖ Triple negatif meme kanserinde boost tedavi
- ❖ **Triple negatif meme kanserinde hipofraksiyone RT**
- ❖ Triple negatif meme kanserinde APBI
- ❖ Sonuç ve Öneriler

HF-WBI, 2011 ve 2018 ASTRO kılavuzları

Faktör	2011 ASTRO	2018 ASTRO
Yaş	≥50	Tüm yaşlar
Evre	T1-2N0	Tüm evreler, WBRT, lenfatik ışınlama ∅
KT	∅	Tüm KT
Doz homojenitesi	Santral axis ± %7	Doz-fraksinizasyondan bağımsız olarak tüm memenin reçetelenen dozun >%105'ini alan hacmi azaltılmalı

ASTRO Consensus on Hypo Fractionated WBI
The New Standard!

Boost: 10 Gy 4-5 Fractions

Total: 20-21 Fractions

Whole breast: 40 - 42.56 Gy / 15-16 Fractions

HF-WBRT:

- ❖ Tümör gradından ve histolojisinden
- ❖ Hormon reseptör durumundan
- ❖ Hastalığın lateralitesinden
- ❖ KT'den
- ❖ Hasta yaşından, bağımsızdır

Boost: hasta bazında karar verilir: *CS+*, *genç hasta ve yakın CS*

START-A; 50 Gy/25 fx/5hf vs 41.6 Gy ya da 39 Gy/13 fx/5 hf → n= 2236

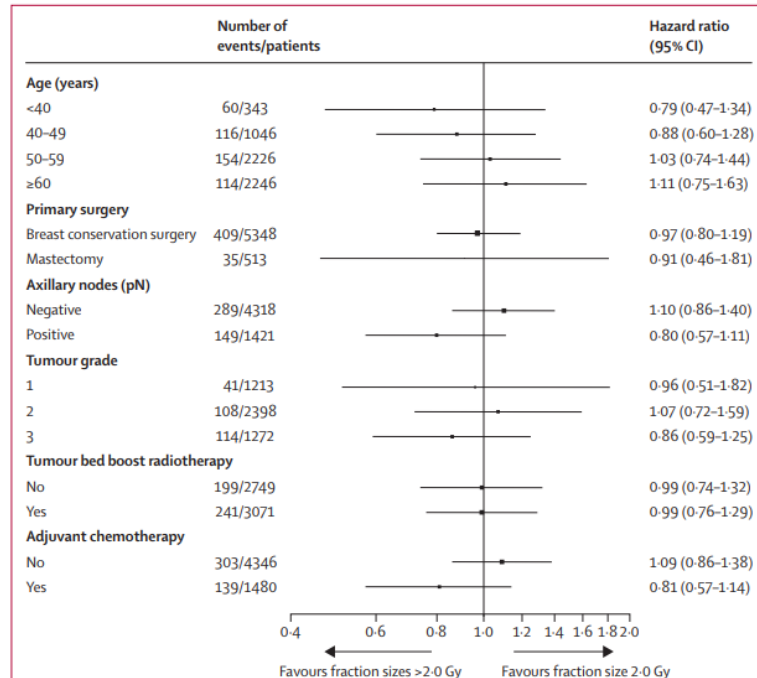
START-B; 50 Gy 25 fx/5hf vs 40 Gy /15 fx/3 hf → n= 2215



The UK Standardisation of Breast Radiotherapy (START) trials of radiotherapy hypofractionation for treatment of early breast cancer: 10-year follow-up results of two randomised controlled trials

Joanne S Haviland, J Roger Owen, John A Dewar, Rajiv K Agrawal, Jane Barrett, Peter J Barrett-Lee, H Jane Dobbs, Penelope Hopwood, Pat A Lawton, Brian J Magee, Judith Mills, Sandra Simmons, Mark A Sydenham, Karen Venables, Judith M Bliss*, John R Yarnold*, on behalf of the START Trialists' Group†

Konvansiyonel=hipofraksiyone: Yaş, primer cerrahi tipi, aksiller nodal durum, tm gradı, adj KT ve tm yatağı boost 'tan bağımsız olarak



Median follow-up: 9.3 years START A and 9.9 years START B

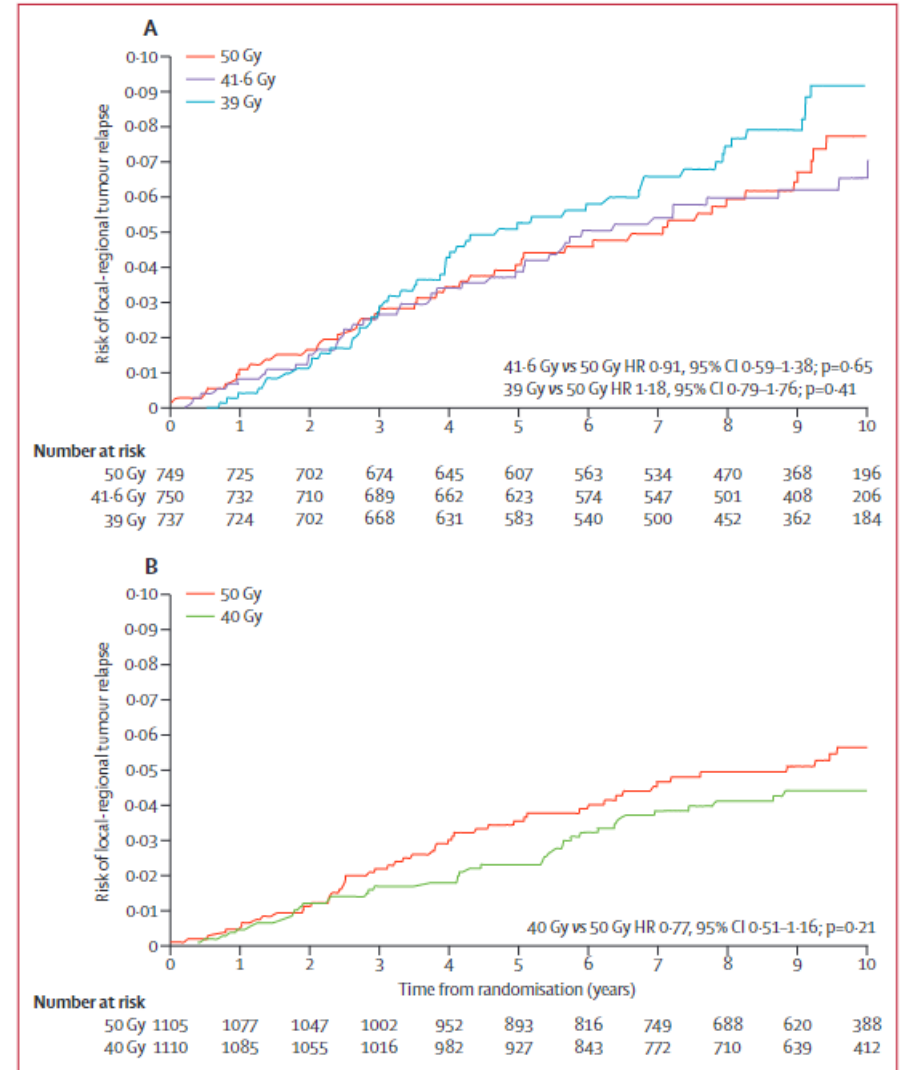


Figure 1: Cumulative risk of local-regional tumour relapse in START-A (A) and START-B (B).

Received Sep 10, 2021; Accepted for publication Oct 15, 2021

CLINICAL INVESTIGATION

Disease Control After Hypofractionation Versus Conventional Fractionation for Triple Negative Breast Cancer: Comparative Effectiveness in a Large Observational Cohort



N=538, 307 CF, 231 moderate HF WBRT
%93.3 hasta boost+
Medyan takip 5 yıl
Triple negatif LN (-) →WBRT HF=CF

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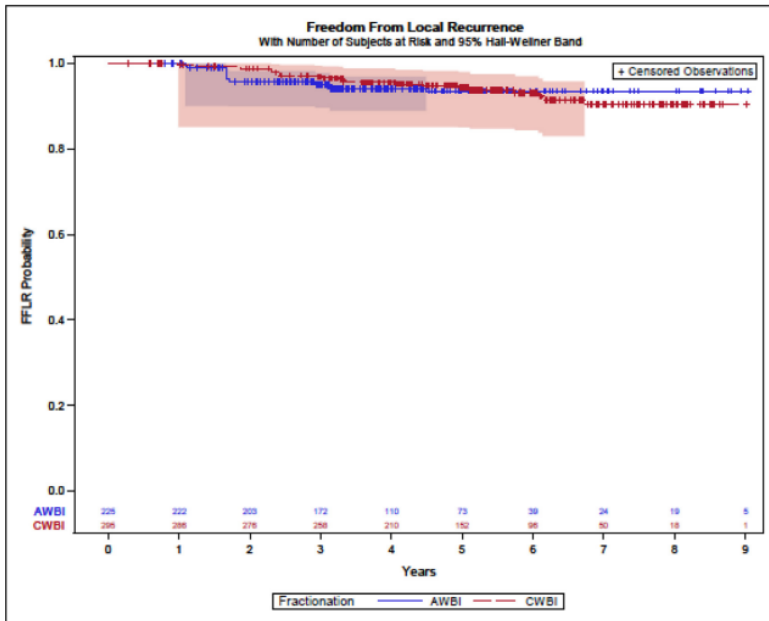


Fig. 1. Freedom from local recurrence—inverse probability of treatment weight adjusted.

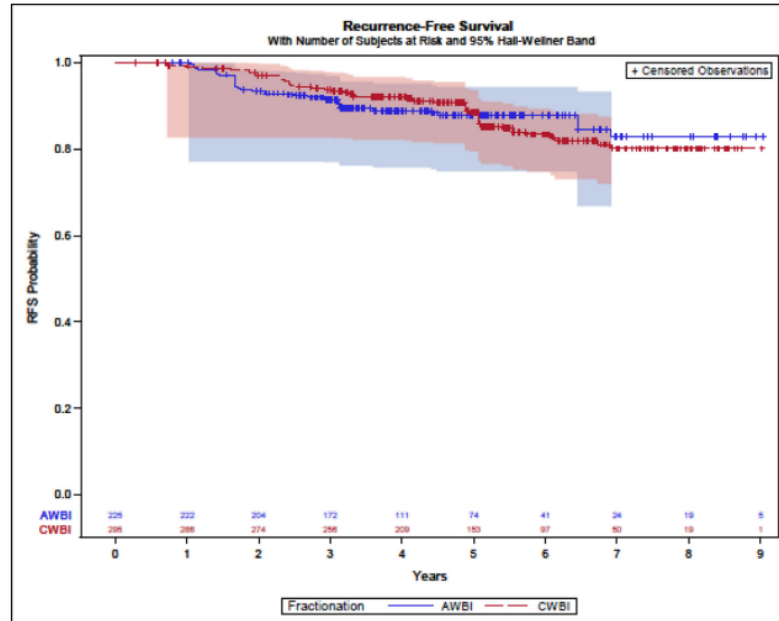


Fig. 2. Recurrence-free survival—inverse probability of treatment weight adjusted.

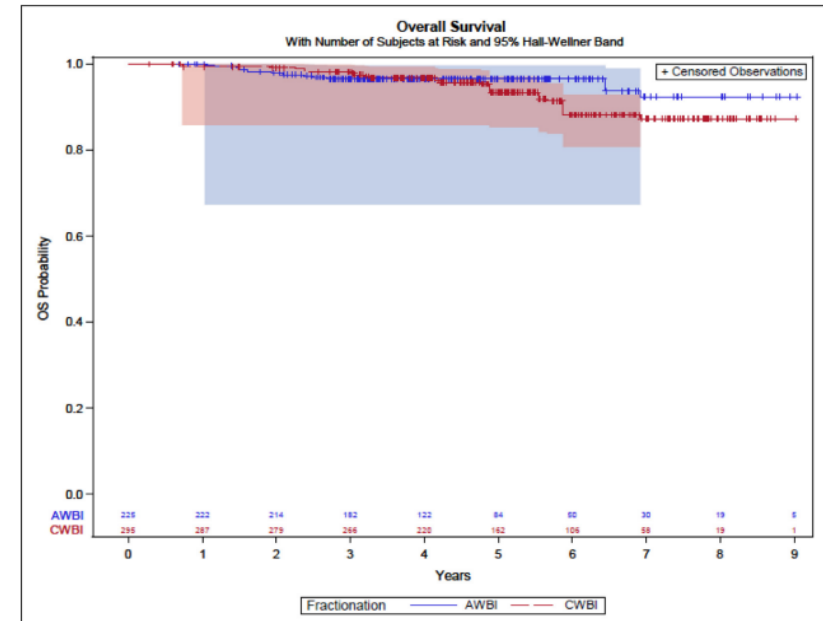


Fig. 3. Overall survival—inverse probability of treatment weight adjusted.

SPECIAL ARTICLE

Customizing local and systemic therapies for women with early breast cancer: the St. Gallen International Consensus Guidelines for treatment of early breast cancer 2021

H. J. Burstein^{1*†}, G. Curigliano^{2*†}, B. Thürlimann³, W. P. Weber⁴, P. Poortmans⁵, M. M. Regan¹, H. J. Senn⁶, E. P. Winer¹
& M. Gnant⁷, Panelists of the St Gallen Consensus Conference[†]

- ❖ Moderate hipofraksiyone tedaviler standart olarak önerilmekte (15-16 fx)
- ❖ Tümör subtipinden, hasta yaşından, tedavi alanı (PMRT, MKC, RNI, rekonst) bağımsız olarak

Triple negatif meme kanserinde hipofraksiyone RT

Her ne kadar triple negatif hastalarda hipofraksiyone RT ile ilgili yeterli veri olmasa da,

Grad, moleküler alt tip HF yanıtını predikte etmez

Triple negatif meme kanserinde hipofraksiyone RT uygulanabilir...

Sunum Planı

- ❖ Triple negatif meme kanserinde prognoz ve tedavi yanıtı
- ❖ Triple negatif meme kanserinde NAKT sonrası RT (MKC, Mastektomi)
- ❖ Triple negatif meme kanserinde adjuvan RT(MKC, Mastektomi)
- ❖ Triple negatif meme kanserinde boost tedavi
- ❖ Triple negatif meme kanserinde hipofraksiyone RT
- ❖ **Triple negatif meme kanserinde APBI**
- ❖ Sonuç ve Öneriler

APBI: hasta seçimi ABS, ASBS ve ASTRO

Kriter	ABS	ASBS	ASTRO (2017)
Yaş	≥50	≥45 (invaziv hastalık) ≥50 (insitu hastalık)	≥50
Histoloji	Tüm subtipler ve DCIS	Invaziv ve DCIS	Invaziv duktal ve diğer olumlu histolojiler (müsinöz, tübüler ve kolloid)
Tm boyutu	≤ 3cm	≤ 3cm	≤ 2.5 cm
CS	-	- Mikroskopik CS	- (en az 2mm)
Aksiller LN	- (ALND ya da SLN)	- (ALND ya da SLN)	- (ALND ya da SLN)
LVSİ	-	N/A	N/A

En uygun hasta;

- ≥50 y
- ≤ 2cm
- LN –
- CS-

Genç hastalarda ipsilateral meme kanseri rekürrens riski WBRT sonrasında ↑
2005 (EBCTCG) meta-analizinde >60 y düşük IBTR ve boost tedaviden daha az fayda

Faz 3 PBI çalışmaları-TNMK dahil edilen

* Randomized trials of PBI v. WBI

Study (Med fu)	N	PBI Method	5-yr IBTR
ELIOT* (5.9y)	651 (10% ER-)	Intraoperative e-	14.9%
GEC-ESTRO* (6.6 y)	655 (5% ER-PR-)	Interstitial(IS)	NR
Pashtan et al. (5.9y)	98 (10% TN)	External Beam (EB)	33%
William Beaumont (4.1y)	202* (10% TN)	Intracavitary, IS, EB	0%

***“ER negative is “cautionary” in
ASTRO PBI Consensus Guidelines***

Veronesi et al; Lancet 2013
Strnad et al; Lancet 2015
Pashtan et al, IJROBP 2012
Wilkinson JB et al; IJROBP 2011

Accelerated Partial Breast Irradiation: Executive summary for the update of an ASTRO Evidence-Based Consensus Statement



Candace Correa MD ^a, Eleanor E. Harris MD ^b, Maria Cristina Leonardi MD ^c, Benjamin D. Smith MD ^d, Alphonse G. Taghian MD, PhD ^e, Alastair M. Thompson MD ^f, Julia White MD ^g, Jay R. Harris MD ^{h,*}

Table 1 Comparison of patient groups in original and updated consensus statements

Patient group	Risk factor	Original	Update
Suitability	Age	≥60 y	≥50 y
	Margins	Negative by at least 2 mm	No change
	T stage	T1	Tis or T1
	DCIS	Not allowed	If all of the below: <ul style="list-style-type: none"> • Screen-detected • Low to intermediate nuclear grade • Size ≤2.5 cm • Resected with margins negative at ≥3 mm
Cautionary	Age	50-59 y	<ul style="list-style-type: none"> • 40-49 y if all other criteria for "suitable" are met • ≥50 y if patient has at least 1 of the pathologic factors below and does not have any "unsuitable" factors <i>Pathologic factors:</i> <ul style="list-style-type: none"> • Size 2.1-3.0 cm ^a • T2 • Close margins (<2 mm) • Limited/focal LVSI • ER(-) • Clinically unifocal with total size 2.1-3.0 cm ^b • Invasive lobular histology • Pure DCIS ≤3 cm if criteria for "suitable" not fully met • EIC ≤3 cm
	Margins	Close (<2 mm)	No change
Unsuitable	DCIS	≤3 cm	≤3 cm and does not meet criteria for "suitable"
	Age	<50 years	<ul style="list-style-type: none"> • <40 y • 40-49 y and do not meet the criteria for cautionary
Unsuitable	Margins	Positive	No change
	DCIS	>3 cm	No change

^a The size of the invasive tumor component.

^b Microscopic multifocality allowed, provided the lesion is clinically unifocal (a single discrete lesion by physical examination and ultrasonography/mammography) and the total lesion size (including foci of multifocality and intervening normal breast parenchyma) falls between 2.1 and 3.0 cm.

- <40 yaş,
- BRCA1/2 mut,
- NAKT uygulanan hastalar uygun değil

- ER-,
- 40-49y,
- Grad 3 dikkatli olunmalı



Triple negatif hastalar dışlanamaz; ancak dikkat!

SPECIAL ARTICLE

Customizing local and systemic therapies for women with early breast cancer: the St. Gallen International Consensus Guidelines for treatment of early breast cancer 2021

H. J. Burstein^{1+†}, G. Curigliano^{2+†}, B. Thürlimann³, W. P. Weber⁴, P. Poortmans⁵, M. M. Regan¹, H. J. Senn⁶, E. P. Winer¹ & M. Gnant⁷, Panelists of the St Gallen Consensus Conference[†]

Strahlenther Onkol (2020) 196:749–763
<https://doi.org/10.1007/s00066-020-01613-z>

REVIEW ARTICLE

**The Breast Cancer Working Group of the German Society for Radiation Oncology
DEGRO practical guideline for partial-breast irradiation**

V. Strnad¹ · D. Krug² · F. Sedlmayer³ · M. D. Piroth⁴ · W. Budach⁵ · R. Baumann⁶ · P. Feyer⁷ · M. N. Duma⁸ · W. Haase⁹ · W. Harms¹⁰ · T. Hehr¹¹ · R. Fietkau¹ · J. Dunst² · R. Sauer¹ · Breast Cancer Expert Panel of the German Society of Radiation Oncology (DEGRO)



- ❖ APBI düşük riskli ve yaşlı hastalarda önerilir
- ❖ Önerilmeyen durumlar:
 - ❖ LVSİ+
 - ❖ <40y
 - ❖ Herediter meme ca (BRCA)

The following should be considered as contraindications for APBI:

1. Stage IIB–IV breast cancer.
2. Resection margins that cannot be microscopically assessed.
3. Extensive intraductal component (EIC).
4. Paget's disease or pathological skin involvement.
5. Age \leq 40 years.
6. Triple-negative or HER2-positive phenotype.
7. Neoadjuvant chemotherapy in treatment history.

**DEGRO kılavuzuna göre triple negatif meme kanserinde
PBI KONTRAENDİKE!**

E ESTRO Guidelines

ESTRO IORT Task Force/ACROP

recommendations for intraoperative radiation therapy with electrons (IORT) in breast cancer

In 2020 ESTRO IORT Task Force/ACROP published their recommendation for intraoperative radiation therapy with electrons in breast cancer. The review provides a comprehensive overview of the role of intraoperative radiation therapy with electrons (IOERT) in breast conserving therapy (BCT), both as partial breast irradiation (PBI) as well as anticipated boost (IOERT boost).

District **Breast**

Treatment **Single Dose Boost**

APBI önerilmeyen:

- Tm boyutu >2 cm
- Aksiller LN + (≥ 4)
- Grad 3
- Triple negatif

ESTRO IORT Task Force/ACROP recommendations for intraoperative radiation therapy with electrons (IOERT) in breast cancer

Gerd Fastner^{1,7}, Christoph Gaisberger¹, Julia Kaiser¹, Philipp Scherer¹, Antonella Ciabattoni², Anna Petoukhova³, Elena Sperk⁴, Philip Poortmans^{5,6}, Felipe A. Calvo^{7,8}, Felix Sedlmayer¹, Maria Cristina Leonardi⁹

Criteria according to APBI guidelines:

- Age ≥ 50 years;
- ductal and other favourable histologies;
- unicentric and unifocal;
- positive receptor status;
- pN0 (i-/i+);

to integrate with:

Criteria according to ASTRO/GEC-ESTRO criteria:

- grade 1/2;
- tumour size ≤ 2 cm;
- Luminal A.



30 April 2020

<https://doi.org/10.1016/j.radonc.2020.04.059>

APBI: Triple negatif meme kanseri

Kılavuz bilgilerine göre önerilmemekte/dikkat edilmesi gerekli

Klinik çalışma kapsamı dışında kullanılmamalıdır...

Sonuç ve öneriler

- ❖ Triple negatif meme kanseri agresif, genç yaş, kötü prognozlu
- ❖ NAKT sonrası yaklaşım tanı anındaki evreye göre hasta bazında
- ❖ Erken evre TNMK'de MKC sonrası WBRT standart, APBI önerilmiyor
- ❖ Boost tedavisi rutin (ER+'lere göre nüks oranı ↑)
- ❖ Hipofraksiyone RT uygun
- ❖ PMRT → Yüksek riskli N0 (i) Medial/santral tm (ii) $T \geq 2$ cm ve < 10 ALND olup 3 kriterden en az bir tanesi mevcut (Grad 3 tm, ER-, LVSI)
- ❖ TNMK hastaları klinik çalışmalara dahil edilmeli



BAŞKENT ÜNİVERSİTESİ



Erken Evre Triple Negatif Meme Kanserinde Tedavi Yöntemi: Radyoterapi

καλοεπιβα

Teşekkür ederim...

ANKARA
MEME
HASTALIKLARI
DERNEĞİ

ANKARA
MEME HASTALIKLARI DERNEĞİ

2021-2022 EĞİTİM DÖNEMİ ALTINCI TOPLANTISI

31 Mart 2022, Ankara