Transarterial treatment of locally advanced breast cancer in de novo setting

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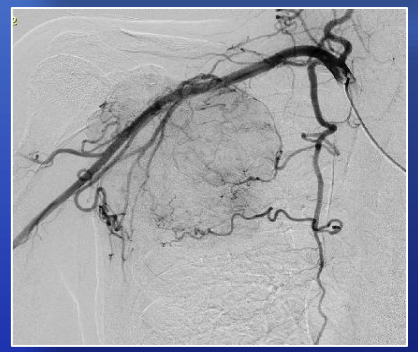
Disclosures: No COI

Purpose

- **Locally advanced breast cancer (LABC) is mainly treated with systemic chemotherapy with radiotherapy, however, local control is usually difficult and the prognosis is poor. The transarterial treatment using anti-neoplastic agents and spherical embolic material for primary tumors and axillary lymph node metastases was conducted to control the both lesions.**
- **The purpose of this study is to confirm the clinical value of transarterial management of LABC.**

Clinical background and Rationale of transarterial treatment

- The most common cancer for women
- Limited treatment options
- Patients are generally in serious conditions.
- Poor prognosis



- Hyper-vascular tumors
- Accessible by trans-arterial approach
- Sensitive to anti-neoplastic agents
- Limited skin damage by spherical embolic material

Materials and Methods; 1

Patients

- A total of 31 previously untreated patients with LABC in T3 (larger than 5cm) or T4 (chest wall or skin invasion) were evaluated retrospectively.
- The mean age was 52.0 (T3) and 60.4 (T4), respectively.
- Axillary lymph node metastases were found 5/5 in T3 and 21/26 in T4 patients.
- Distant metastases were found 1/5 in T3 and 9/26 in T4.
- Triple negative patients were 3/5 in T3 and 3/26 in T4.

Diagnostic and treatment modalities

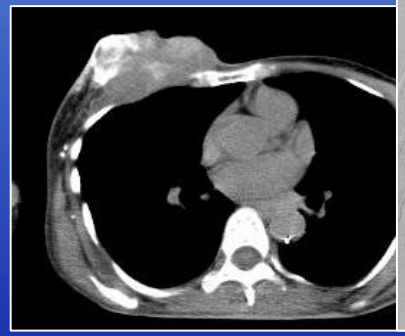
- Dynamic CT and 3-D reconstruction of relevant arteries.
- Angio-CT apparatus for treatment.
- Microcatheter; Estream IGT 2.0 Fr (Toray Medical, Tokyo)
- Drugs; Standard antineoplastic agents for breast cancer with low dose intra-arterial administration
- Embolic materials; Superabsorbent polymer microsphere; HepaSphere (30-60) or (50-100). (Merit Medical Systems, Salt Lake City) loaded anthracyclin or docetaxel.

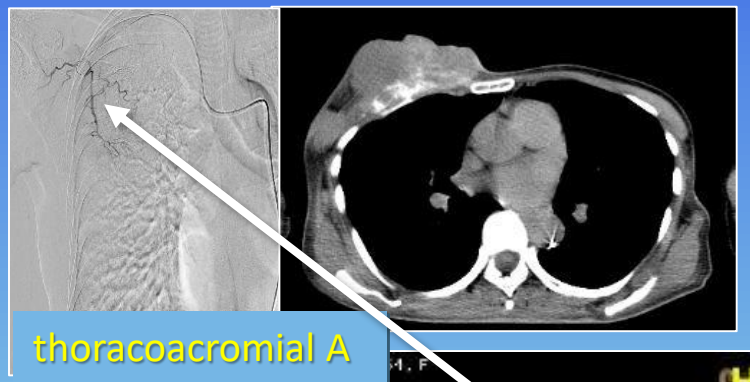
Patients characteristics	Primary tumor T3 (larger than 5cm)	Primary tumor T4 (chest wall and /or skin invasion)
Number of Patients	5	26
Age (Average)	46-62(52.0)	40-81 (60.4)
Ipsilateral axillary lymph node metastases	5	21
Primary tumor size		
<5	-	9
5-10	3	8
10<	1	3
Distant Metastases	1	9
Lung and mediastinum	1	6
Liver	1	6
Bone	0	3
Performance Status		
0	2	3
1	2	16
2	0	1
3	0	0
Receptors		
Estrogen receptor	9	5
Progesterone receptor	5	1
HER 2 protein (3+)	5	3
Triple Negative	3	3

Treatment Methods; 2

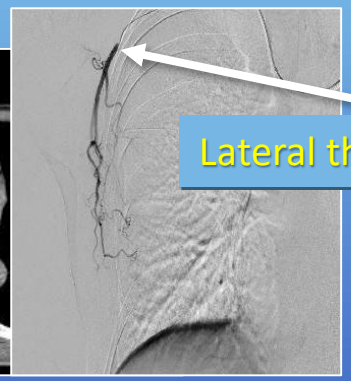
Case 1; 55 y/o F, Invasive ductal carcinoma, T4N0M0

Photography and enhanced CT

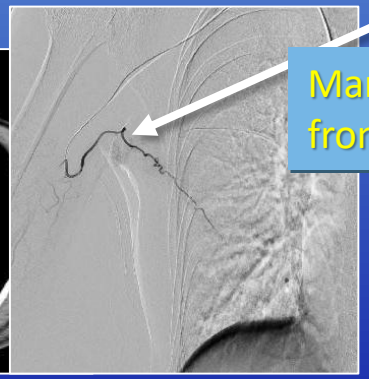




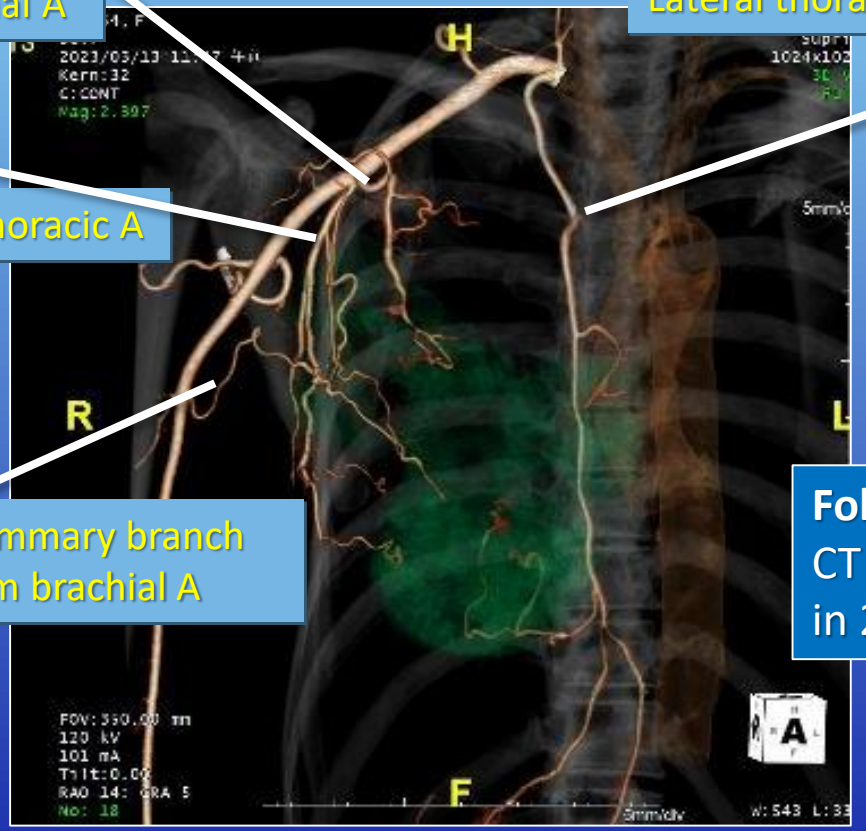
thoracoacromial A

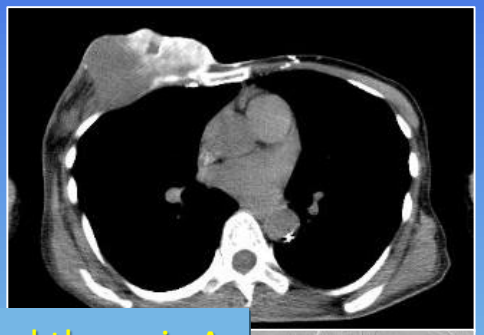


Lateral thoracic A



Mammary branch from brachial A





Lateral thoracic A

Drugs

Docetaxel;20mg
Carboplatine;30mg
Fluorouracil;250mg
Bevacizumab;200mg

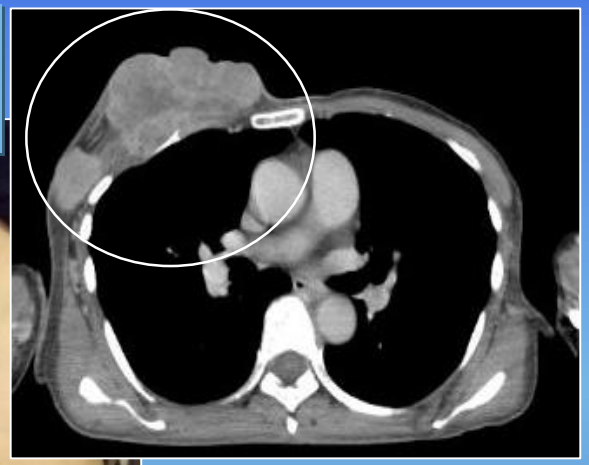
Embolic Material

Docetaxel loaded HepaSphere

Follow-up study;
CT and blood tests in 2-4 weeks

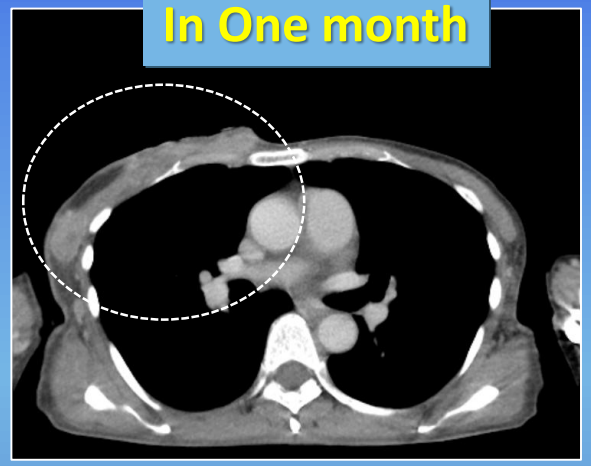
Result Case 1; 55 y/o F, Invasive ductal carcinoma, T4N0M0

Before treatment



CA15-3:138
CEA;3.5

In One month



CA15-3:93
CEA;2.3

In 3 months

CA15-3:16
CEA;1.8

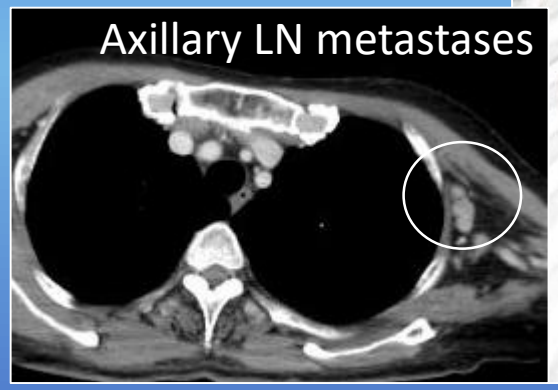
Drugs
Docetaxel;20mg
Carboplatine;30mg
Fluorouracil;250mg
Bevacizumab;200mg

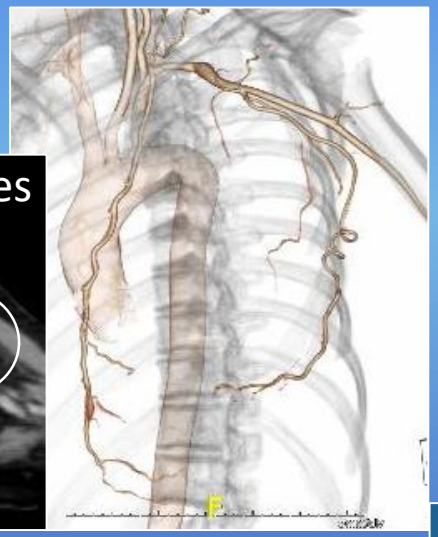
Embolic Material
Doctaxel loaded HepaSphere

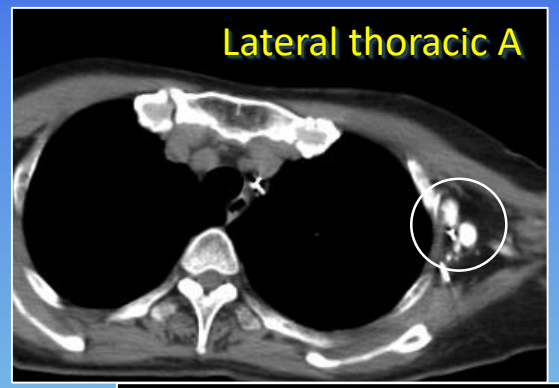
Results Case 2, 43 F, Invasive ductal carcinoma, T4N1M0

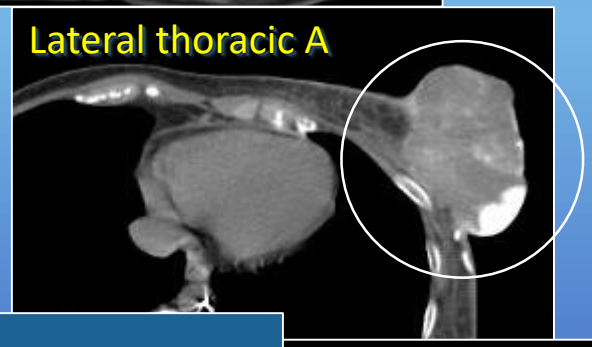
Clinical history;

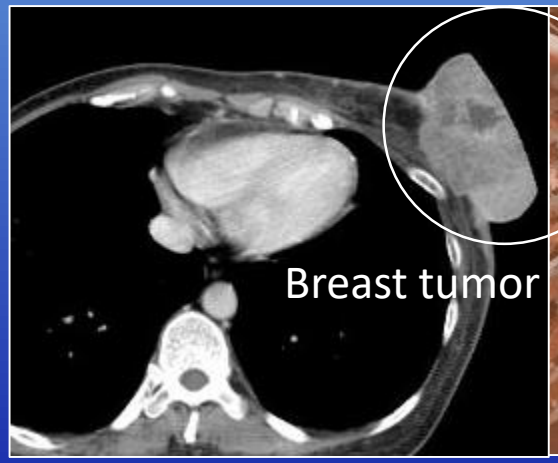
- 2019; Right radical mastectomy
- 2020; Rapid growing of the left breast tumor

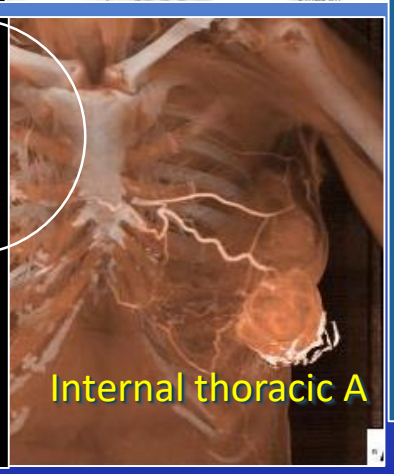




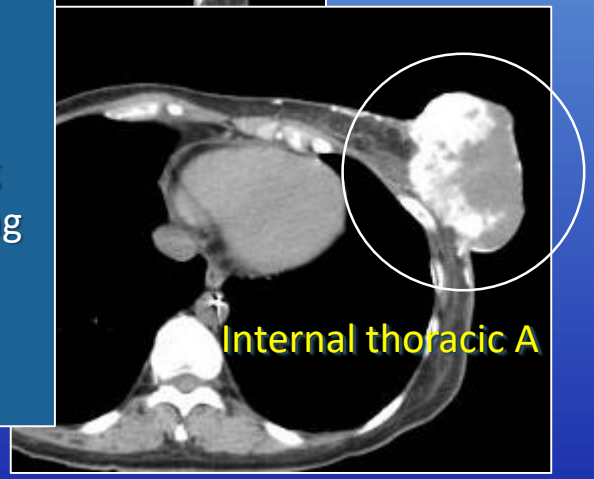




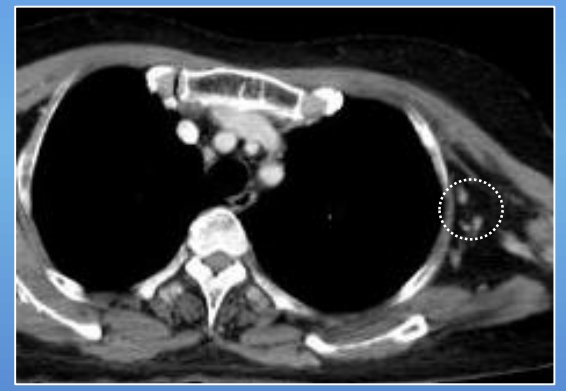


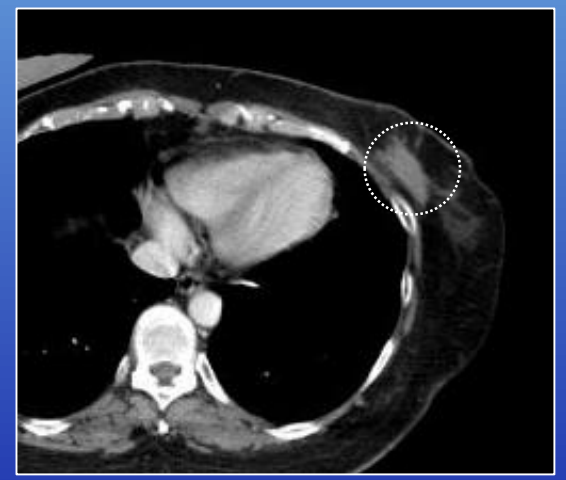


Drugs
Docetaxel;20mg
Carboplatine;30mg
Fluorouracil;250mg
Bevacizumab;200mg
Embolic Material
Doctaxel loaded HepaSphere

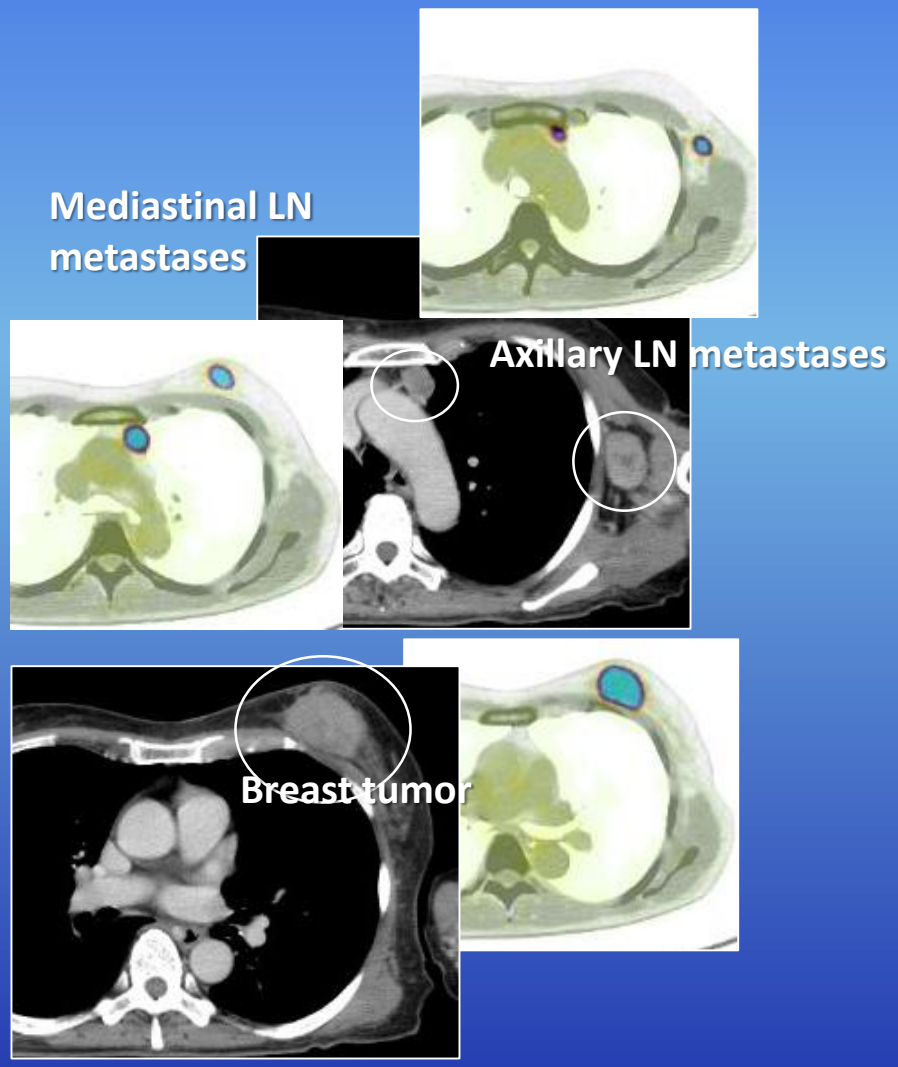


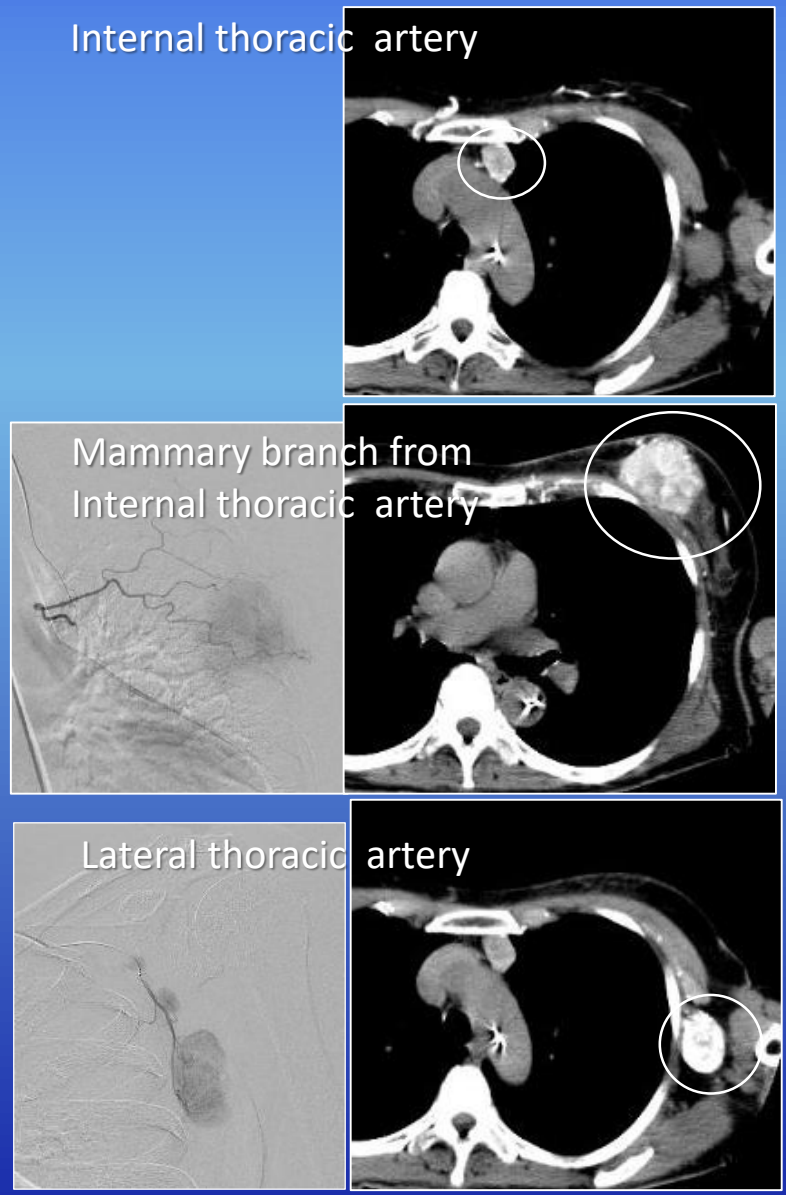
In one year



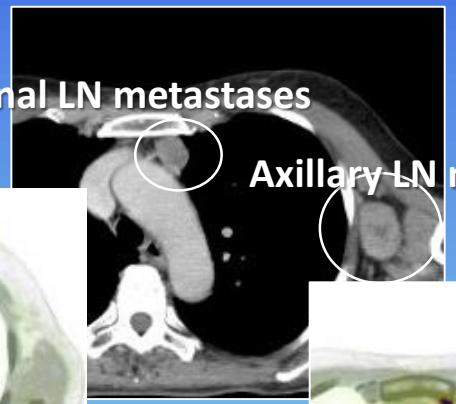


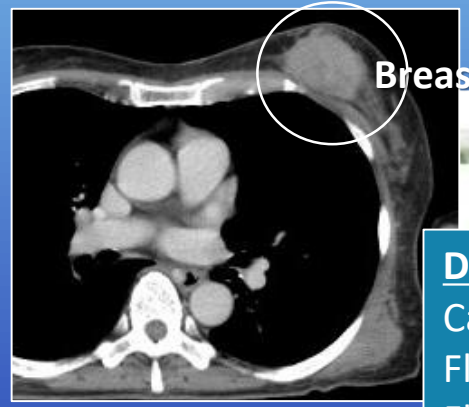
Results Case 3-1, 43 y/o F, Invasive ductal carcinoma





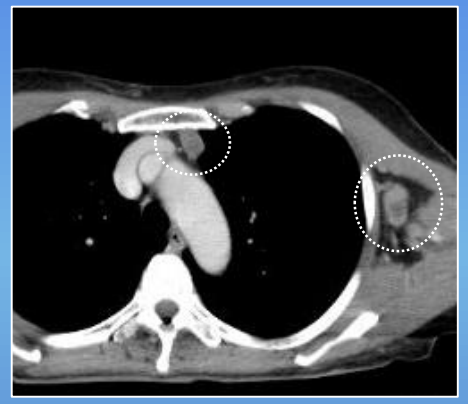
Results Case 3-2, 43 y/o F, Invasive ductal carcinoma

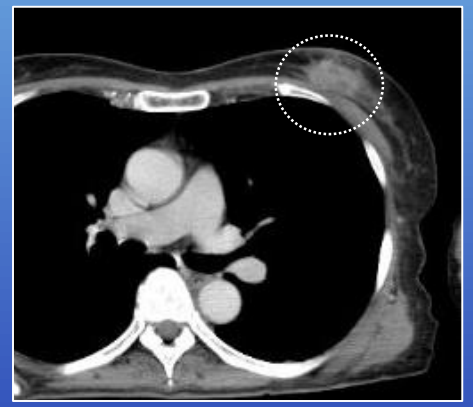


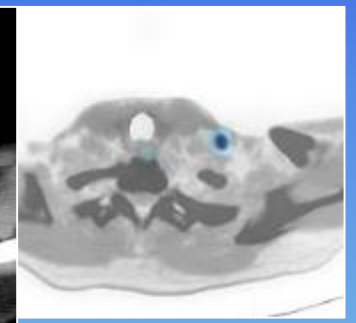


Drugs
Carboplatine;30mg
Fluorouracil;250mg
Fluorouracil;250mg
Bevacizumab;100mg
Embolic Material
Epirubicin loaded HepaSphere

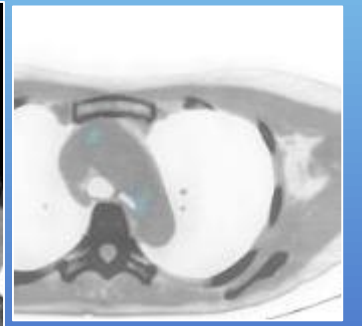
One month

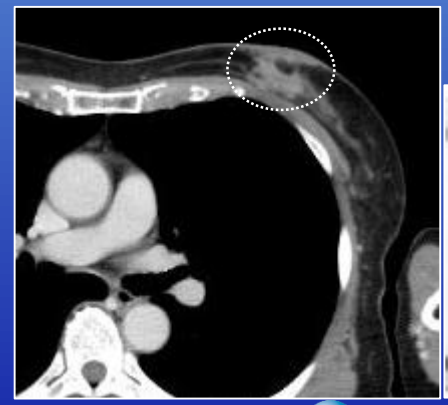


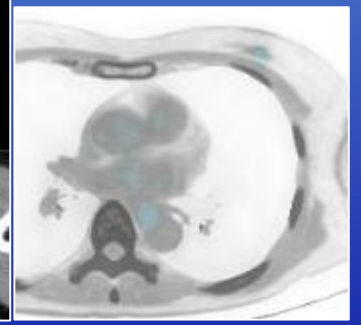




Radiotherapy





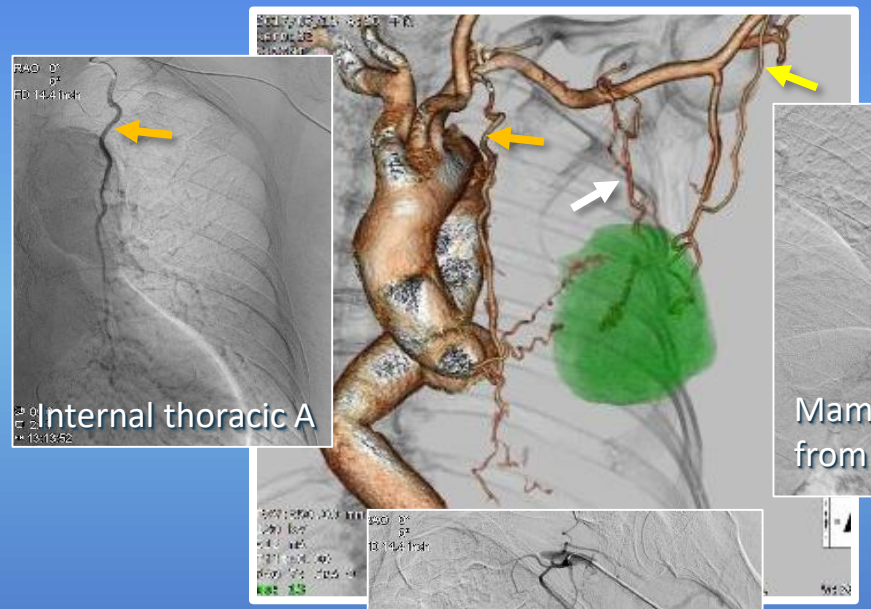


Results; 5 Case 4; 82 y/o F Ductal invasive carcinoma

Before treatment

CEA;34.0

Trans-radial approaches



Drugs
Adriamycin;20mg
Fluorouracil;500mg
Mitomycin;6mg
Embolic Material
Fluorouracil loaded HepaSphere

In 6 months

CEA;5.4

Results

Treatment characteristics	Primary breast tumors and axillary lymph node metastases
Treated arterial branches	
Internal thoracic artery	31
Lateral thoracic artery	25
Subscapular trunk	19
Thoraco-acrominal artery	13
Branch from brachial artery	10
Anticancer drugs	
Anthracycline (10-20mg)	28
Docetaxel (10-20mg)	2
Fluorouracil (250mg)	30
Cisplatin (10-20mg)	7
Carboplatin(20-30mg)	9
Mitomycin (2-4mg)	10
Bevacizumab (100-200mg)	9
Drugs loaded on SAP-MS*	
Fluorouracil	14
Adriamycin	16
None	1

Local effects in breast tumors and LN metastases

Breast tumors	1 month	3 months	6 months	12 months
CR	0/31	0/31	0/24	0/17
PR	6/31 (19%)	15/31 (48%)	19/24 (79%)	12/17 (70%)
SD	25/31 (81%)	16/31 (52%)	5/24 (21%)	3/17 (18%)
PD	(			
Average reduction rate	1			

The control rate in one year was 88%.

Axillary lymph node	1 month	3 months	6 months	12 months
CR	0/23	0/23	0/20	0/15
PR	5/23 (23%)	14/23 (61%)	15/20 (75%)	11/15 (73%)
SD	18/23 (78%)	9/23 (39%)	5/20 (25%)	4/15 (27%)
PD	0/23	0/23	0/20	0/15

Axillary lymph adenopathy was also controlled in one year.

Adverse events in 1 month and 3 months

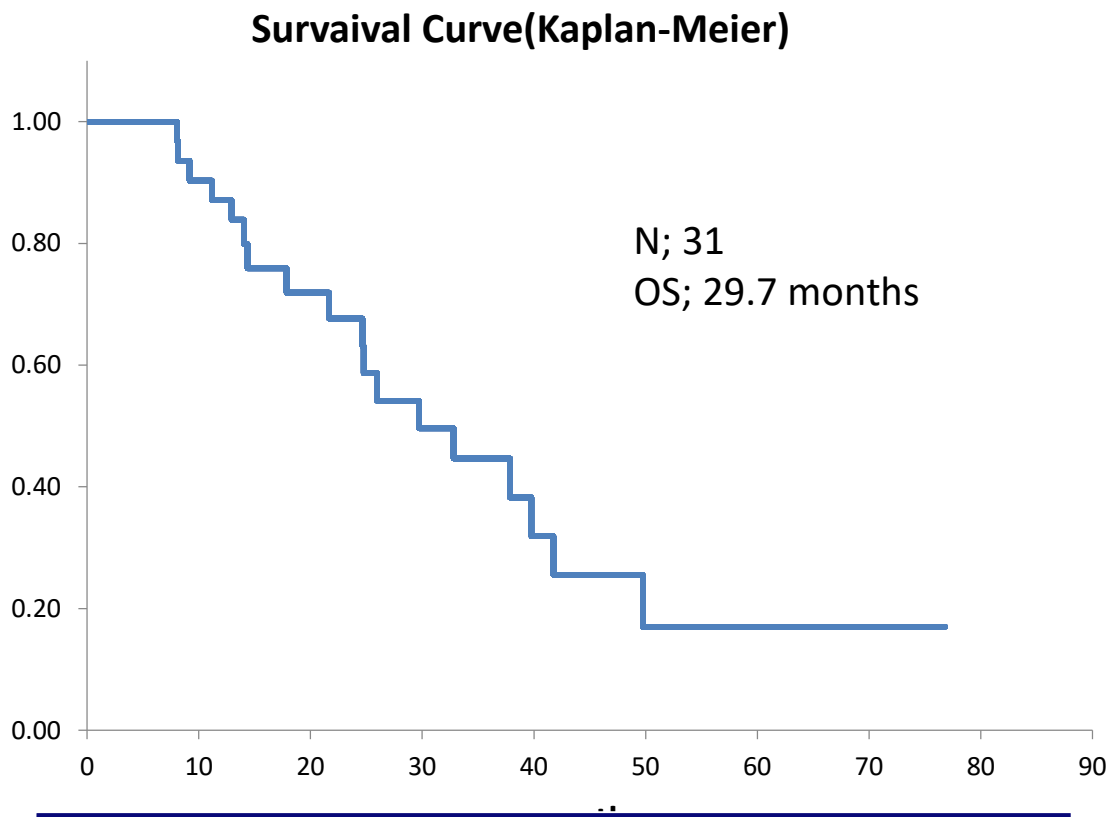
One month	G1	G2	G3	G4
Local pain	22	1	0	0
Tumor bleeding	4	0	0	0
Allergic reaction	3	1	0	0
Skin reaction	6	0	0	0

3 months	G1	G2	G3	G4
Local pain	3	0	0	0
Tumor bleeding	2	0	0	0
Allergic reaction	0	0	0	0

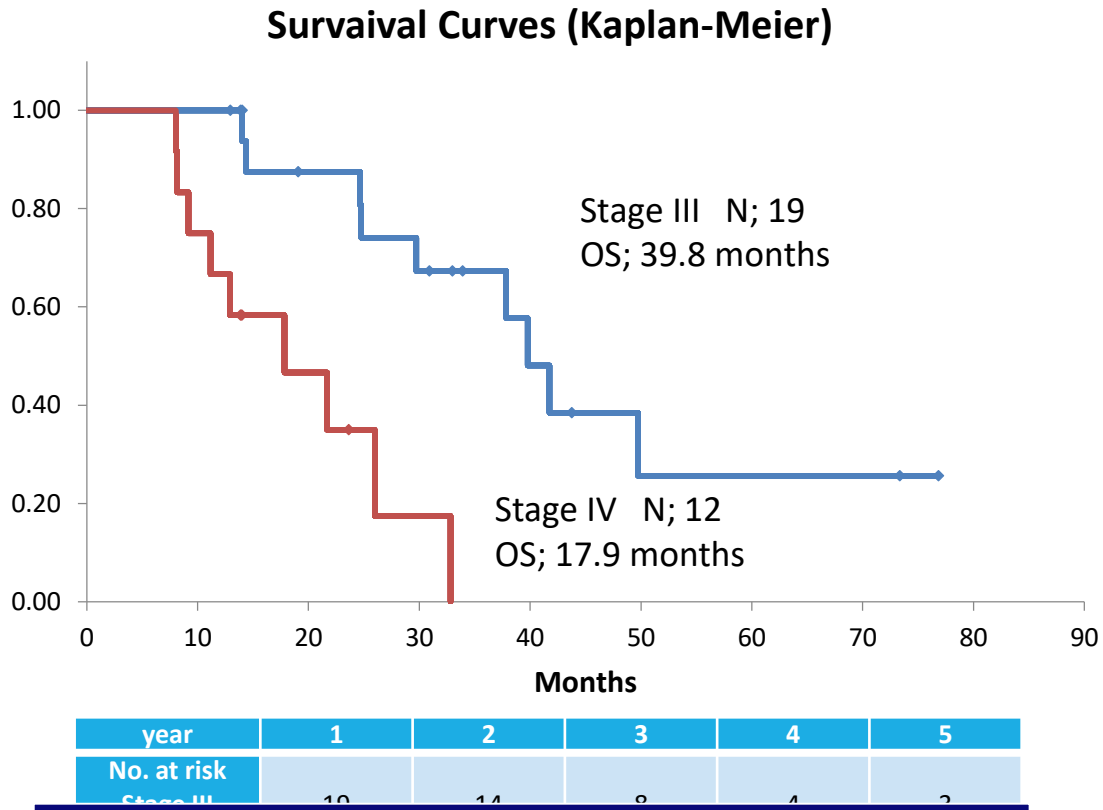
Adverse events were well controlled without special treatments

Results

Survival Curves



Survival curve was compatible with standard treatment methods.



Presence of distant metastases was a poor prognostic factor.

Discussions

- Techniques of interventional radiology can be applicable for the treatment of advanced breast cancer.
- Arterial administration of antineoplastic agent did not troublesome for patients
- Spherical embolic material; superabsorbent polymer microsphere was effective without serious complications.
- The breast tumors were controlled in 88% of patients after one year.
- Axillary lymph node metastases were also controlled in one year.
- Adverse events were all controlled by usual treatments within a month.
- Transarterial treatment for locally advanced breast cancer effectively manages tumors, providing patients with an extended lifespan and improved quality of life.

Conclusion

Transarterial chemoembolization (TACE) for locally advanced breast cancer is a viable and effective strategy for reducing tumor burden and improving symptoms. Consequently, this treatment extends patients' lives while maiCAntaining a higher quality of life.

Reference: Case presentation;1316

A Hori, N Kennoki, S Hori, et al. Feasibility study of transarterial chemotherapy followed by chemoembolization for recurrent breast cancer. J Vasc Interv Radiol 2024; 35:516–522 https://doi.org/10.1016/j.jvir.2023.12.016