

# Does endocrine therapy in mucinous and tubular breast cancer improve outcomes?

Nicola Jane Mitchell, David James Porter

Department of Medical Oncology, Auckland City Hospital, Auckland, New Zealand

## Background

Mucinous and tubular histology breast carcinoma have better prognosis than infiltrating ductal carcinoma. Patients often receive adjuvant treatment as if their risk was standard but questions arise about which patients could safely avoid treatment, without it affecting their prospects of survival.

## Aims

To establish the current local treatment practices in Auckland, New Zealand.

To assess survival outcomes according to histology, prognostic index and use of adjuvant hormonal therapy.

## Methods

We identified patients with early stage breast carcinomas of mucinous and tubular histology using prospectively collected data from the Auckland Breast Cancer Registry between June 2000 and June 2012.

Patients were case matched with infiltrating ductal carcinoma according to tumour size, grade, nodal status and age. Because the likelihood of patients receiving endocrine therapy increased with higher risk, survival outcomes were also analysed by Nottingham Prognostic Index sub-group.

## Results

161 cases of mucinous histology and 201 cases of tubular histology breast carcinoma were identified over the 12 year period. Table 1 compares the demographic and prognostic factors of the mucinous and tubular cancer populations, and the matching controls for each group.

The median age of patients diagnosed with mucinous breast cancer was 63 years and tubular breast cancer was 57 years. The median tumour size was 18mm and 9mm respectively.

The majority of tubular breast cancers were low risk with 94% having grade 1 tumours, and 87% being node negative. This equated to 91% of tubular breast cancers being categorized into the Excellent Prognostic Group (EPG) Nottingham Prognostic Index. In this sub-group most patients did not receive adjuvant hormonal therapy (95%, n=172).

The mucinous breast cancers had more variable prognostic features although overall still had favorable characteristics with 66% of patients having grade 1 tumours and 29% grade 2 tumours. The majority (80%) were node negative.

Table 1. Baseline Characteristics

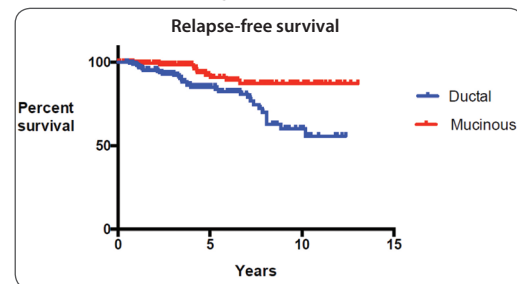
	Mucinous n = 161	Ductal (Case Matched Mucinous) n = 161	Tubular n = 201	Ductal (Case Matched Tubular) n = 201
Age in years, median (quartiles)	63 (52,75)	63 (53, 74)	57 (50, 65)	57 (50, 65)
Tumour Size in mm, median (quartiles)	18 (12, 27)	18 (12, 27)	9 (6, 13)	9 (6, 13)
Tumour Grade (%)				
1	107 (66%)	107 (66%)	189 (94%)	191 (95%)
2	47 (29%)	49 (30%)	8 (4%)	8 (4%)
3	4 (2.5%)	4 (2.5%)	1 (0.5%)	1 (0.5%)
Unknown	3 (1.9%)	1 (0.6%)	3 (1.5%)	1 (0.5%)
Tumour nodal status				
0	129 (80%)	130 (81%)	174 (87%)	186 (93%)
1 to 3	13 (8%)	14 (9%)	9 (4%)	11 (5%)
4+	4 (2%)	5 (3%)	0 (0%)	0 (0%)
Unknown	15 (9%)	12 (7%)	18 (9%)	4 (2%)
NPI				
Excellent	65 (40%)	63 (39%)	182 (91%)	180 (90%)
Good	58 (36%)	60 (37%)	12 (6%)	14 (7%)
Moderate	32 (20%)	31 (19%)	7 (3%)	7 (3%)
Poor	6 (4%)	7 (4%)	0 (0%)	0 (0%)
Adjuvant chemotherapy (%)	15 (9%)	16 (9%)	6 (3%)	4 (2%)
Adjuvant hormonal therapy (%)	64 (40%)	87 (54%)	25 (12%)	46 (23%)
Adjuvant radiotherapy (%)	82 (51%)	83 (52%)	129 (64%)	130 (65%)

Endocrine therapy was used more in case-matched infiltrating ductal carcinomas than mucinous carcinomas (54% vs 40%) or tubular carcinomas (23% vs 12%). Chemotherapy was used evenly across the case matched groups; 9% of mucinous and 3% of tubular breast carcinomas. Adjuvant radiotherapy was also evenly matched.

Median follow up was 4.3 years for mucinous and 4.8 years for tubular carcinomas.

Relapse free survival was superior in mucinous compared to case-matched infiltrating ductal carcinomas (HR 0.3, p=0.0012) as seen in Figure 1. Distant disease free survival was also superior in mucinous carcinoma (HR 0.2, p=0.011).

Figure 1. Relapse free survival, mucinous compared to case-matched infiltrating ductal carcinomas.



A trend towards improved overall survival with adjuvant endocrine therapy in mucinous carcinomas was seen (HR 0.3, p=0.056), as shown in Figure 2. This occurred despite endocrine therapy use being more common in higher risk Nottingham Prognostic Index groups (Figure 3). This suggests that the inherently worse prognosis is overcome by the use of endocrine therapy.

There was a trend to improvement in overall survival with adjuvant endocrine therapy in the Good Nottingham Prognostic Index group (HR 0.2, p=0.051), see Figure 4. There were insufficient numbers in other prognostic groups to perform formal comparison, although there was no overall survival benefit with hormone therapy in the Excellent Prognostic Group NPI (HR 0.8, p=0.81).

Figure 2. Overall survival with adjuvant endocrine therapy in mucinous carcinomas

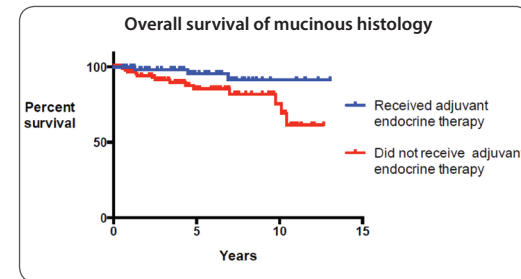


Figure 3. Percentage of patients who received adjuvant endocrine therapy according to Nottingham Prognostic Index sub-group

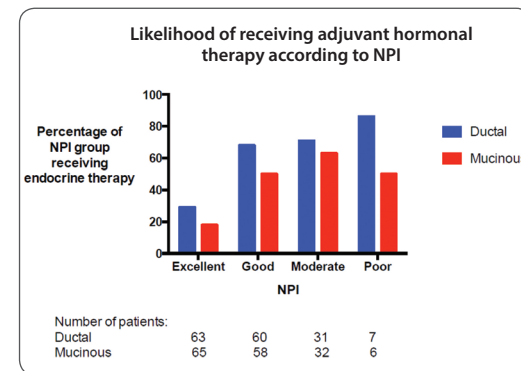
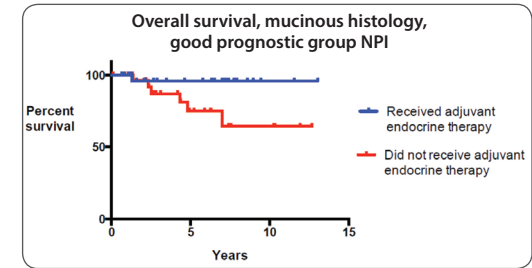


Figure 4. Overall survival with adjuvant endocrine therapy in Good Nottingham Prognostic Index sub-group mucinous carcinomas



Relapse free survival (HR 0.7, p=0.38) and distant disease free survival (HR 0.1, p=0.083) were similar in tubular compared to case matched infiltrating ductal carcinomas (Figure 5). Of 182 patients with excellent prognostic group tubular cancer, only 10 received endocrine therapy with no improvement in overall survival (HR 2.8, p=0.18, 95% CI 0.5 - 44.8) as seen in Figure 6.

Figure 5. Relapse free survival, tubular compared to case-matched infiltrating ductal carcinoma

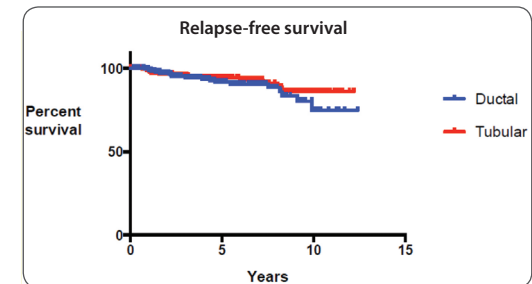
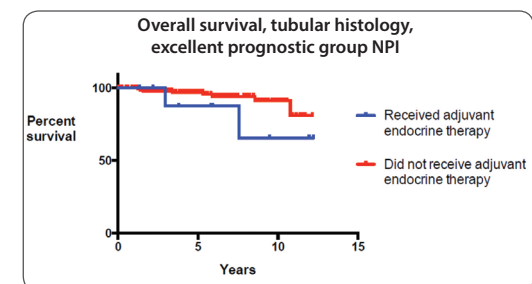


Figure 6. Overall survival with adjuvant endocrine therapy in Excellent Nottingham Prognostic Index sub-group tubular carcinomas



## Conclusion

In our study, mucinous carcinomas have an inherently better survival than infiltrating ductal carcinomas as seen in other reviews. The largest review of mucinous carcinomas to date is a retrospective series from the SEER database of 11,422 patients from 1973 to 2002<sup>1</sup>. Overall survival outcomes were better for mucinous carcinomas compared to ductal, however there was no data reported for the use of adjuvant endocrine therapy. In two other retrospective series of 111 patients<sup>2</sup> and 268 patients<sup>3</sup> with mucinous histology breast cancer the use of adjuvant endocrine therapy was much higher (84% and 88.5% respectively) compared to our series (40%). Adjuvant chemotherapy use was also higher (33% and 47.5%) compared to only 9% in our series. The larger study showed improved survival outcomes following adjuvant hormonal therapy (95% CI 0.191 - 0.489)<sup>3</sup>.

Our study supports that patients with mucinous carcinoma at higher risk of recurrence may benefit from endocrine therapy. The good prognosis in tubular carcinoma appears to be due to low stage at presentation.

No benefit of endocrine therapy was seen in tubular or Excellent Nottingham Prognostic Index sub-group mucinous carcinoma, suggesting selected women may be safely spared the side effects and costs of treatment.

## References:

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