Pregnancy and Cancer

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Background

- There is a 50% higher age-standardised incidence rate of cancer during pregnancy in comparison to non-pregnant women of reproductive age

- Importance of learning lessons to improve future diagnosis and management of malignancy in association with pregnancy

National Cancer Registration and Analysis Service 2018

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Incidence

Overall 1-2 per 1,000

- Breast
- Melanoma
- Cervical
- Haematological

Possible increased incidence over time

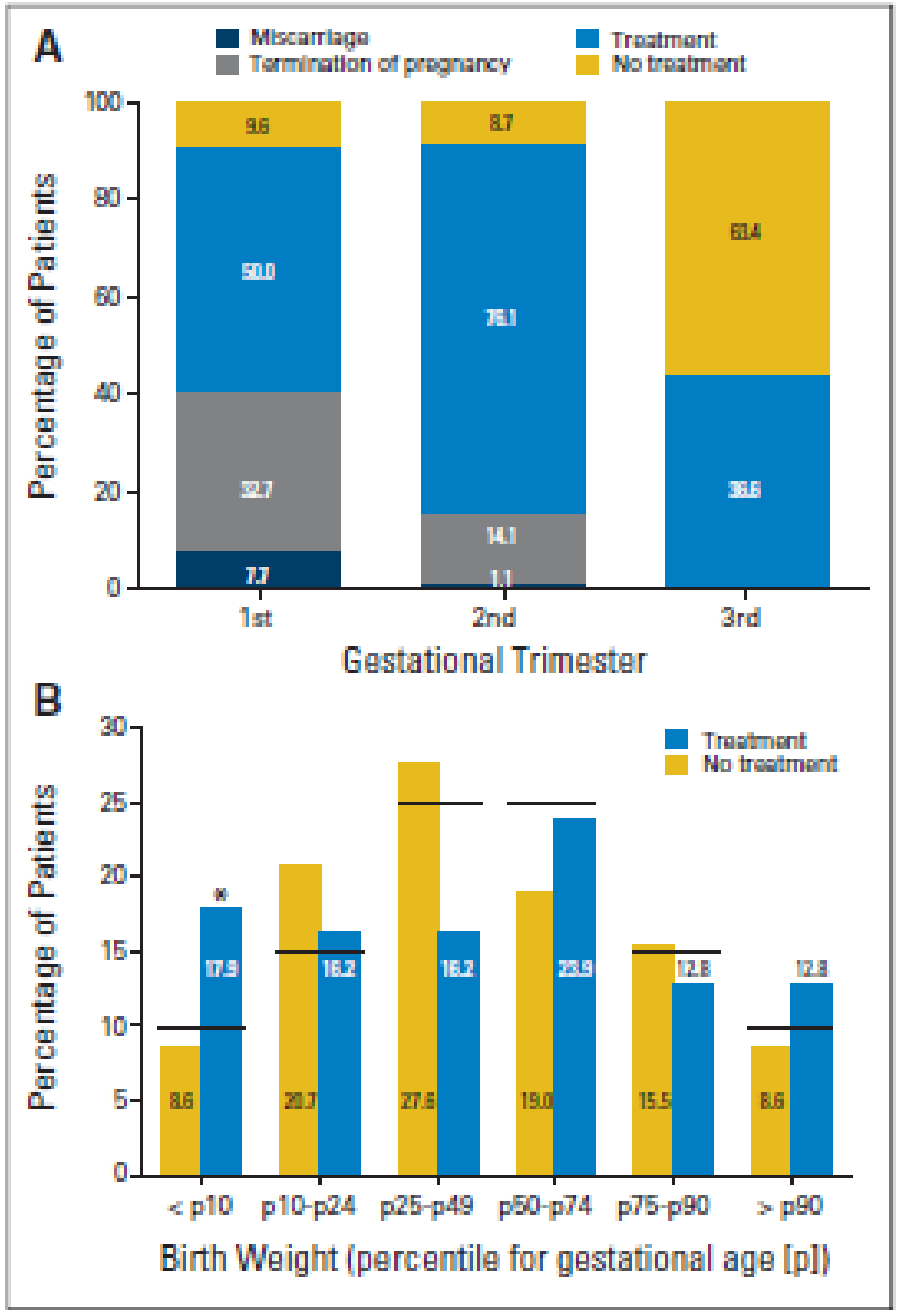
BJOG 2012 Lee et al Australian data

Journal of clinical oncology 2010 Calsteren et al

Cancer 2015 Anderson et al

Table 1. Distribution of Tumor Types

Tumor Type	No.	%
Breast cancer	99	46
Hematologic malignancies	40	18
Hodgkin's disease	13	6.0
Non-Hodgkin's lymphoma	10	4.7
Acute lymphatic leukemia	4	1.9
Acute myelogenous leukemia	7	3.2
Chronic myelogenous leukemia	4	1.9
Hairy cell leukemia	1	0.5
Multiple myeloma	1	0.5
Dermatologic malignancies	21	10
Basal cell carcinoma	9	4.2
Melanoma	11	5.1
Kaposi's sarcoma	1	0.5
Cervical cancer	17	8
Brain tumor	8	4
Ovarian cancer	8	4
Colorectal cancer	5	2
Other (sarcoma, lung, liver, kidney, GI stromal tumor, thyroid, urachus, rhinopharyngeal)	17	8
Total	215	100


A
Miscarriage
Termination of pregnancy
Treatment
No treatment
Percentage of Patients
100
80
60
40
20
0
9.6
50.0
32.7
7.7
8.7
76.1
14.1
1.1
63.4
36.6
1st
2nd
3rd
Gestational Trimester
B
Treatment
No treatment
Percentage of Patients
30
25
20
15
10
5
0
*
17.9
8.6
16.2
20.7
16.2
27.6
23.9
19.0
12.8
15.5
12.8
8.6
< p10
p10-p24
p25-p49
p50-p74
p75-p90
> p90
Birth Weight (percentile for gestational age [p])

Labor	All Pregnancies		
	No. of Pregnancies	%	Gestational Age (mean No. of weeks ± SD)
Spontaneous	41	22.8	38.3 ± 2.4
Induction	66	36.7	36.5 ± 2.3
Elective cesarean section	63	35.0	34.7 ± 2.9
Unknown	10	5.6	—
Total	180		36.3 ± 2.9

Pregnancy complications in 215 women with cancer

Treatment	Number	Pregnancy complications	%
No treatment	58	PIH/PET 3	3%
Chemotherapy	33	Sepsis1 PPROM3 Premature delivery 6	30%
Chemotherapy & surgery	25	Sepsis 1 Premature delivery 2	12%
Surgery alone	49	IUGR 1 Sepsis 1	4%
Radiotherapy	10	IUGR 1	10%

Previous Cancer

- Fertility*
- Germline
- Malformations
- IUGR
- Premlabour
- Risk of IUD/Stillbirth
- Maternal side effects*

Cervical competance

- LLETZ
- Cone biopsy
- Trachelectomy

Previous childhood cancer

- Increasing numbers (600 survivors annually)
- Possible increased IUGR , miscarriage and IUD following pelvic radiation

Risk of Recurrence

- Little good evidence of increase
- Delay to demonstrate recurrence unlikely

New diagnosis/ recurrence

- Diagnosis
- Initial management
- Discussions
- Support
- Timing of treatment
- Timing of delivery

Diagnosis

- Ultrasound
- CT Adverse fetal effects associated with radiation exposure include microcephaly, mental retardation, intellectual deficits, or induction of
- childhood malignancies
- MRI
- Tumour markers
- Diagnostic surgery

Imaging

Fetal Radiation Exposure in mGys

- Ultrasound 0
- MRI 0
- CXR, mammography, CT head and neck, cervical spine 0.001-0.1
- Xray abdo/pelvis, lumbar spine, CT Chest 0.1-1.0
- Adominal CT, technetium-99 bone scan 1-10
- CT Pelvis, PET-CT FDG 10-50

Initial management

- Multi-disciplinary
- Rapid access
- Appropriate, informed advice
- Psychological support

Discussion

- Affect on fetus
- What treatment would be offered if not pregnant
- Does timing of delivery affect prognosis
- Affect of surgery on pregnancy
- Affect of chemotherapy on pregnancy
- Can radiotherapy be used

Who has a TOP?

- Individual
- Little evidence of benefit
- May allow different treatment regime
- Those with very high risk of early mortality might
- Family circumstances

Surgery

- Timing
- Anaesthesia
- Risk of miscarriage
- Ease of operating

Chemotherapy

- Generally avoided in first trimester
- Variety of differing malformations described
- Possible increased risk of IUGR
- Risk of maternal pancytopenia may be minimised with growth factors
- Generally avoid breast feeding as risk of neonatal neutropenia

Birth Weight Below 10th Percentile			
Treatment During Pregnancy	No.	Total No.	%
Chemotherapy	10	33	30.3
Surgery + chemotherapy	4	25	16.0
Surgery + radiotherapy	1	2	50
Surgery	5	46	10.9
Radiotherapy	1	2	50.0
No treatment	5	58	8.6
Chemotherapy + radiotherapy	0	1	0
Chemotherapy + radiotherapy + surgery	0	3	0
Other treatments	0	5	0

Total 175 patients rate 14.9%

Radiotherapy

- Generally avoided
- Can be used with careful shielding after first trimester
- Useful for boney metastases with imminent spinal cord compression
- Affect depends on dose to fetus and gestation
- Miscarriage if >20cGy
- Mental retardation if >18cGy at 8-15 weeks

Timing of delivery

- At term, timed between chemo cycles (usually 2 weeks after a course to minimise maternal and neonatal neutropenia)
- Early so baby does not get chemotherapy at all
- Early allow further treatment (eg radiotherapy)
- Timed to allow mother time with her baby (in extremis)
- **Spontaneous**

Fetal affects

- Placental spread
- Chemotherapy
- Radiotherapy
- ?IUGR
- Prematurity

Thromboprophylaxis

- NEJM 1992 showed increased risk of cancer in patients with idiopathic thrombosis (OR 2.3) most in first year
- Increased risk of VTE in breast cancer in combination with chemotherapy or tamoxifen (5.4vs 1.8%)
- Increased risk with central lines

Thromboprophylaxis guidelines

American college of Physicians Guidelines 2005

LMWH in patients with cancer and surgery, chemotherapy or central lines

American Haematology Society Dec 2010

AN and Postnatal prophylaxis for women with cancer and pregnancy

RCOG Greentop 2009

Cancer counts as one risk factor. Thus if 3 or more for AN prophylaxis. If 2 or more treat as in patient and for 7 days postnatally

Breast feeding

- Important
- Contraindicated with chemotherapy (neonatal immunosupression)
- ?reduces risk of breast Ca
- May be possible for a short time

Contraception

- Important
- Usually non-hormonal if Breast Cancer

The women who died

- 104 women died during or up to one year after pregnancy from malignant disease during 2014-16 in the UK and Ireland
- 26 women died during or up to six weeks after the end of pregnancy, a mortality rate of 1.04 per 100,000 maternities (95% CI 0.68-1.53)
- 78 women died from cancer between six weeks and one year after the end of pregnancy

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The women who died

Type of Cancer	Died during pregnancy or up to 6/52 postpartum 9/26 had autopsies	Late deaths (45 reviewed)
Breast cancer	8	6
Brain or CNS tumours	6	4
Gastrointestinal	5	10
Choriocarcinoma	1	-
Others	4	6
Unknown	2	2
Haematological	-	7
Cervical	-	5
Skin	-	5

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Key messages

- Repeated presentation with pain and/or pain requiring opiates should be considered a 'red flag' and warrant a thorough assessment of the woman to establish the cause.

ACTION: Health professionals

- If a cancer diagnosis is suspected, investigations should proceed in the same manner and on the same timescale as for a non-pregnant woman, but with caution when there is evidence of specific risks to the fetus.

ACTION: Service planners/commissioners, service managers, health professionals

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Key messages

- For women with cancer, advice on postponement of pregnancy and contraception should be individualised and based on treatment needs and prognosis over time

ACTION: Service planners/commissioners, service managers, health professionals

- All pregnant or postpartum women who are diagnosed with cancer should have the possibility of an underlying familial syndrome considered, with appropriate investigations, including tumour testing, performed and family testing offered as appropriate.

ACTION: Service planners/commissioners, service managers, health professionals


NICK ANDERSON 2-7-07
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SOCIAL CONSERVA-TIVES