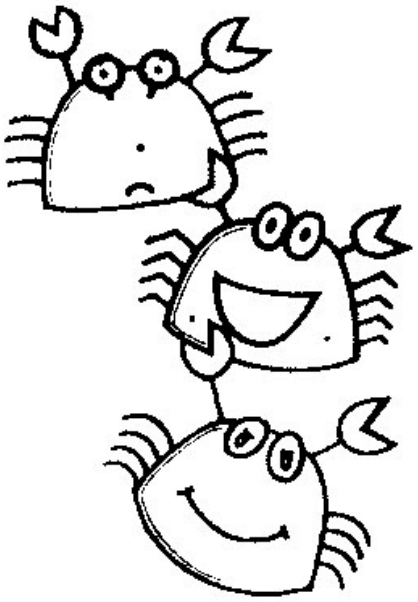
ANNUAL REPORT

ON

GYNECOLOGIC ONCOLOGY

2021



DIVISION OF GYNECOLOGIC ONCOLOGY

DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

FACULTY OF MEDICINE, CHIANG MAI UNIVERSITY

CHIANG MAI, THAILAND

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FACULTY OF MEDICINE, CHIANG MAI UNIVERSITY
CHIANG MAI, THAILAND
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PREFACE

This updated 2021 version of the Gynecologic Oncology Annual Report summarizes our activities over the year. We managed 269 women diagnosed with gynecologic malignancies. Approximately half of these patients had cervical cancer while uterine cancer and ovarian cancer contributed almost equally to 44.24 % of all the cases. This information implies that carcinoma of the uterine cervix, uterine corpus, and ovary continue to play a dominant role when malignancies of the female genital tract are considered. This finding could be at least partly explained by the relative decrease in cervical cancer incidence resulting from more effective screening strategy with wider coverage and the relative increase in incidence of uterine and ovarian cancer due to the lifestyle change of this population.

This report is divided into two sections. The first section provides overview from the Gynecologic Cancer Registry of Chiang Mai University and detailed, organ-specific epidemiological data. The second section describes the infrastructure of our division and our academic contribution including international publications and abstract presentations.

I would like to express my sincere gratitude to Mrs. Sopida Fanchomphu and Mr. Tanarat Muangmool for their excellent work on gathering data for and editing this publication. Also, I am thankful to Mrs. Sopida Fanchomphu and Ms. Orathai Baisai for their hard work and great help on day-to-day data collection and database maintenance. In addition, I would like to hereby acknowledge the kind help and collaboration of our colleagues in Radiation Oncology, Gynecologic Pathology, Medical Oncology, Urology, Gastrointestinal/Colorectal Surgery, and Nursing departments. Furthermore, I deeply appreciate my Gynecologic Oncology colleagues and fellows for their perseverance and dedication. Without their determination, our mission would not be possible.

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    - Gestational Trophoblastic Disease
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TABLE 1: Gynecologic Oncology Registry: Chiang Mai University 1997-2021

Site	1997 Number (%)	1998 Number (%)	1999 Number (%)	2000 Number (%)	2001 Number (%)	2002 Number (%)	2003 Number (%)	2004 Number (%)	2005 Number (%)	2006 Number (%)
Cervix	547 (75.2)	483 (73.0)	497 (75.3)	502 (71.3)	500 (70.8)	521 (69.7)	624 (71.7)	532 (66.9)	525 (66.4)	488 (66.8)
Ovary	87 (12.0)	83 (12.5)	82 (12.4)	96 (13.6)	90 (12.7)	110 (14.7)	111 (12.8)	126 (15.9)	121 (15.3)	114 (15.6)
Corpus	48 (6.6)	47 (7.1)	49 (7.4)	56 (8.0)	63 (8.9)	61 (8.2)	67 (7.7)	89 (11.2)	97 (12.3)	84 (11.5)
Vulva	20 (2.8)	21 (3.2)	15 (2.2)	29 (4.1)	23 (3.3)	25 (3.3)	29 (3.3)	22 (2.8)	19 (2.4)	15 (2.0)
Vagina	11 (1.5)	10 (1.5)	3 (0.5)	2 (0.3)	9 (1.3)	6 (0.8)	12 (1.4)	5 (0.6)	4 (0.5)	5 (0.7)
FT	-	2 (0.3)	3 (0.5)	5 (0.7)	3 (0.4)	4 (0.5)	6 (0.7)	5 (0.6)	4 (0.5)	7 (1.0)
PPA	-	-	2 (0.3)	1 (0.1)	-	2 (0.3)	7 (0.8)	3 (0.4)	4 (0.5)	6 (0.8)
GTT	14 (1.9)	16 (2.4)	8 (1.2)	13 (1.9)	18 (2.6)	19 (2.5)	14 (1.6)	13 (1.6)	17 (2.1)	12 (1.6)
Total	**727 (100)**	**662 (100)**	**660(659) (100)**	**704 (100)**	**706 (100)**	**748 (100)**	**870 (100)**	**795 (100)**	**791 (100)**	**731 (100)**

PPA = Primary peritoneal adenocarcinoma FT = Fallopian tube GTT = Gestational trophoblastic tumors

TABLE 1: Gynecologic Oncology Registry: Chiang Mai University 1997-2021 (continued)

Site	2007 Number (%)	2008 Number (%)	2009 Number (%)	2010 Number (%)	2011 Number (%)	2012 Number (%)	2013 Number (%)	2014 Number (%)	2015 Number (%)	2016 Number (%)
Cervix	480 (63.6)	473 (62.3)	436 (58.1)	449(64.2)	387(57.2)	345 (57.9)	285 (54.8)	297 (58.4)	244 (52.6)	251 (52.5)
Ovary	132 (17.5)	115 (15.2)	141 (18.8)	105 (15.0)	118 (17.5)	86 (14.5)	85 (16.3)	87 (17.1)	85 (18.3)	69 (14.5)
Corpus	91 (12.0)	117 (15.4)	116 (15.5)	94 (13.5)	114 (16.9)	106 (17.8)	109 (21.0)	92 (18.1)	93 (20.0)	110 (23.0)
Vulva	11 (1.5)	21 (2.8)	24 (3.2)	21 (3.0)	16 (2.4)	27 (4.5)	24 (4.6)	11 (2.2)	15 (3.2)	22 (4.6)
Vagina	6 (0.7)	7 (0.9)	7 (0.9)	12 (1.7)	11 (1.6)	5 (0.8)	2 (0.4)	2 (0.4)	2 (0.4)	3 (0.6)
FT	7 (0.9)	4 (0.5)	4 (0.5)	6 (0.9)	3 (0.4)	4 (0.7)	3 (0.6)	7 (1.4)	11 (2.4)	11 (2.3)
PPA	11 (1.5)	7 (0.9)	8 (1.1)	-	5 (0.7)	8 (1.3)	4 (0.8)	6 (1.2)	4 (0.9)	4 (0.8)
GTT	17 (2.3)	15 (2.0)	14 (1.9)	12 (1.7)	22 (3.3)	15 (2.5)	8 (1.5)	7 (1.4)	10 (2.2)	8 (1.7)
Total	**755 (100)**	**759 (100)**	**750 (100)**	**699 (100)**	**676 (100)**	**596 (100)**	**520 (100)**	**509 (100)**	**464 (100)**	**478 (100)**

PPA = Primary peritoneal adenocarcinoma FT = Fallopian tube GTT = Gestational trophoblastic tumors

TABLE 1: Gynecologic Oncology Registry: Chiang Mai University 1997-2021 (continued)

Site	2017 Number (%)	2018 Number (%)	2019 Number (%)	2020 Number (%)	2021 Number (%)
Cervix	256 (51.2)	213 (51.9)	224 (51.3)	228 (54.5)	119 (44.2)
Ovary	90 (18.0)	71 (17.3)	66 (15.1)	67 (16.0)	49 (18.2)
Corpus	102 (20.4)	88 (21.4)	112 (25.6)	81 (19.4)	74 (27.5)
Vulva	20 (4.0)	19 (4.6)	13 (3.0)	15 (3.6)	4 (1.5)
Vagina	5 (1.0)	1 (0.2)	3 (0.7)	5 (1.2)	3 (1.1)
FT	9 (1.8)	14 (3.4)	9 (2.1)	11 (2.6)	11 (4.1)
PPA	2 (0.4)	2 (0.5)	1 (0.2)	2 (0.5)	4 (1.5)
GTT	16 (3.2)	2 (0.5)	7 (1.6)	9 (2.2)	5 (1.9)
Others	-	1 (0.2)	2 (0.4)	-	-
Total	**500 (100)**	**411 (100)**	**437 (100)**	**418 (100)**	**269 (100)**

PPA = Primary peritoneal adenocarcinoma FT = Fallopian tube GTT = Gestational trophoblastic tumors

Gynecologic Oncology Multiple Primary Cancers: Chiang Mai University 2002-2021

Multiple primary cancers	2002 Number	2003 Number	2004 Number	2005 Number	2006 Number	2007 Number	2008 Number	2009 Number	2010 Number	2011 Number	2012 Number
Ovarian and cervical cancer	2	1	1	1	-	-	1	-	-	-	-
Ovarian and corpus cancer	7	-	5	13	5	4	8	5	7	4	4
Corpus and cervical cancer	1	-	-	1	-	1	-	-	-	-	-
Corpus and fallopian tube cancer	1	-	-	-	1	-	-	1	1	-	1
Corpus and peritoneal cancer	-	1	1	1	-	-	-	-	-	-	-
Corpus and choriocarcinoma	-	-	-	-	-	-	-	1	-	-	-
Cervical and fallopian tube cancer	-	-	1	-	-	-	-	-	-	-	-
Ovarian and fallopian tube	-	-	-	-	-	1	-	1	1	-	-
Ovarian and fallopian tube and corpus cancer	-	-	-	-	1	1	-	-	1	-	-
Cervical and vulva cancer	-	-	-	-	-	-	-	-	2	-	1
Corpus and colon cancer	-	-	-	-	-	-	-	-	1	-	-
Corpus and bladder cancer	-	-	-	-	-	-	-	-	-	1	-
Cervix and ileal cancer	-	-	-	-	-	-	-	-	-	1	-

Gynecologic Oncology Multiple Primary Cancers: Chiang Mai University 2002-2021

Multiple primary cancers	2013 Number	2014 Number	2015 Number	2016 Number	2017 Number	2018 Number	2019 Number	2020 Number	2021 Number
Ovarian and cervical cancer	-	1	-	-	-	-	-	-	-
Ovarian and corpus cancer	4	4	3	5	2	3	-	-	-
Corpus and cervical cancer	-	1	-	-	2	-	-	-	-
Corpus and fallopian tube cancer	-	1	-	-	-	-	-	-	-
Corpus and peritoneal cancer	-	-	-	-	-	-	-	-	-
Corpus and choriocarcinoma	-	-	-	-	-	-	-	-	-
Cervical and fallopian tube cancer	-	-	-	-	-	-	-	-	-
Ovarian and fallopian tube	-	-	-	-	1	1	-	-	-
Ovarian and fallopian tube and corpus cancer	-	-	-	1	-	-	-	-	-
Cervical and vulva cancer	-	-	-	-	-	-	-	-	-
Corpus and colon cancer	-	-	-	-	-	-	-	-	-
Corpus and bladder cancer	-	-	-	-	1	-	-	-	-
Cervix and ileal cancer	-	-	-	-	-	-	-	-	-

Operations and Procedures in Gynecologic Oncology

Operations and procedures	1997 Number	1998 Number	1999 Number	2000 Number	2001 Number	2002 Number	2003 Number	2004 Number	2005 Number	2006 Number
Surgery for ovarian & tubal cancer	64	43	64	70	45	69	88	79	80	111
Surgery for corpus cancer	33	28	26	36	43	39	47	60	75	53
Surgery for vulvar cancer	10	14	5	19	12	14	21	19	14	12
Radical hysterectomy*	55	77	113	120	116	135	150	151	149	143
Laparoscopic radical hysterectomy*	-	-	-	-	-	-	-	4	18	21
Radical parametrectomy*	2	2	1	1	1	3	4	1	1	2
Laparoscopic radical parametrectomy*	-	-	-	-	-	-	-	1	1	3
Extrafascial hysterectomy	118	110	155	182	121	89	43	35	52	55
Total laparoscopic hysterectomy		-	-	-	-	-	10	11	9	4
CKC	66	65	79	13	14	22	16	9	10	5
LEEP	61	35	166	207	194	221	380	276	261	309
Cryosurgery	20	15	18	8	4	3	1	-	2	-
Colposcopy	227	235	463	371	369	306	357	399	499	627

* with pelvic lymphadenectomy CKC = Cold knife conization LEEP = Loop electrosurgical excision procedure

Operations and Procedures in Gynecologic Oncology (continued)

Operations and procedures	**2007** Number	**2008** Number	**2009** Number	**2010** Number	**2011** Number	**2012** Number	**2013** Number	**2014** Number	**2015** Number	**2016** Number
Surgery for ovarian & tubal Cancer	89	95	115	87	117	103	88	92	105	82
Surgery for corpus cancer	80	106	83	87	96	94	100	81	72	110
Surgery for vulvar cancer	8	21	18	20	14	17	20	28	15	28
Radical hysterectomy*	120	121	103	125	89	71	58	57	55	58
Modified radical hysterectomy*	-	-	18	12	17	12	7	10	9	6
Abandoned hysterectomy*	-	-	1	1	3	7	2	2	2	2
Radical parametrectomy*	1	-	1	-	2	2	-	2	1	1
Laparoscopic surgical staging for corpus cancer	-	-	-	6	4	3	2	5	4	4
Laparoscopic radical hysterectomy*	11	16	5	-	9	9	8	3	3	8
Laparoscopic radical trachelectomy*	-	-	-	-	-	-	-	2	-	-
Laparoscopic radical parametrectomy*	-	-	-	2	-	-	-	-	-	-
Total laparoscopic hysterectomy	4	2	2	2	2	1	1	3	-	-
Robotic radical hysterectomy*	-	-	-	-	-	-	2	1	-	-
CKC	15	6	5	6	2	-	1	-	-	-
LEEP	317	235	175	203	157	173	239	144	215	160
Colposcopy	519	556	474	409	406	494	728	659	775	600

* with pelvic lymphadenectomy CKC = Cold knife conization LEEP = Loop electrosurgical excision procedure

Operations and Procedures in Gynecologic Oncology (continued)

Operations and Procedures	**2017** Number	**2018** Number	**2019** Number	**2020** Number	**2021** Number
Surgery for ovarian & tubal cancer	90	88	69	88	58
Surgery for corpus cancer	98	87	87	87	68
Surgery for vulvar cancer	17	22	22	22	3
Radical hysterectomy*	74	56	56	56	25
Modified radical hysterectomy*	4	4	4	4	1
Abandoned hysterectomy*	-	-	-	-	1
Radical parametrectomy*	2	-	-	-	-
Laparoscopic radical hysterectomy*	3	3	3	3	1
NOTES assisted vaginal hysterectomy	2	2	2	2	
NOTES assisted extrafascial hysterectomy	1	-	-	-	
Laparoscopic radical parametrectomy*	-	-	-	-	-
Total laparoscopic hysterectomy	1	2	2	2	5
CKC	-	-	-	-	-
LEEP	116	89	115	87	60
Colposcopy	537	463	470	627	389

*** with pelvic lymphadenectomy**

CKC = Cold knife conization

LEEP = Loop electrosurgical excision procedure

NOTES = Natural orifice transluminal endoscopic surgery

Cancer of the Cervix

➢ Distribution by

- Age
- Parity
- Stage and Substage
- HIV Status
- Histological Type
- Treatment

TABLE 2: Cancer of the Cervix: Age Distribution

Age	Number	Percent
≤ 30	1	0.8
31-40	16	13.5
41-50	25	21.0
51-60	39	32.8
61-70	23	19.3
71-80	11	9.2
≥ 81	4	3.4
Total	119	**100**

Minimum age 13.0 years, Maximum age 89.0 years
Mean age 55.0 ± 14.39 years

TABLE 3: Cancer of the Cervix: Parity Distribution

Parity	Number	Percent
0	17	14.3
1	25	21.0
2	58	48.7
3	7	5.9
4	7	5.9
5	2	1.7
6	2	1.7
7	1	0.8
Total	119	**100**

TABLE 4: Cancer of the Cervix: Stage Distribution

Stage	Number	Percent
I	31	26.1
II	24	20.2
III	38	31.9
IV	12	10.1
Advanced stage	1	0.8
Recurrent	5	4.2
HSIL	6	5.0
Unstaged	2	1.7
Total	**119**	**100**

TABLE 5: Cancer of the Cervix: Stage and Substage Distribution

	Stage	**Number**	**Percent**
I	IA	-	-
	IA1	8	6.7
	IA2	1	0.8
	IB	1	0.8
	IB1	9	7.6
	IB2	7	5.9
	IB3	5	4.2
II	IIA	1	0.8
	IIA1	1	0.8
	IIA2	2	1.7
	IIB	20	16.8
III	IIIA	3	2.5
	IIIB	16	13.5
	IIIC	2	1.7
	IIIC1	12	10.1
	IIC2	5	4.2
IV	IVA	5	4.2
	IVB	7	5.9
Recurrent		5	4.2
Advanced stage		1	0.8
HSIL		6	5.0
Unstaged		2	1.7
	Total	**119**	**100**

HSIL = High-grade squamous intraepithelial lesion

TABLE 6: HIV Status in Cervical Cancer Patients dividing by Stage

Stage	Number Negative HIV (%)	Number Positive HIV (%)	Number not done (%)	Total (%)
IA1	8 (7.8)	-	-	8 (6.7)
IA2	1 (1.0)	-	-	1 (0.8)
IB	1 (1.0)	-	-	1 (0.8)
IB1	7 (6.9)	1 (20.0)	1 (8.3)	9 (7.6)
IB2	7 (6.9)	-	-	7 (5.9)
IB3	5 (4.9)	-	-	5 (4.2)
IIA	-	-	1 (8.3)	1 (0.8)
IIA1	1 (1.0)	-	-	1 (0.8)
IIA2	2 (2.0)	-	-	2 (1.7)
IIB	20 (19.6)	-	-	20 (16.8)
IIIA	3 (2.9)	-	-	3 (2.5)
IIIB	14 (13.7)	1 (20.0)	1 (8.3)	16 (13.5)
IIIC	2 (2.0)	-	-	2 (1.7)
IIIC1	10 (9.8)	2 (40.0)	-	12 (10.1)
IIIC2	3 (2.9)	-	2 (16.7)	5 (4.2)
IVA	4 (3.9)	-	1 (8.3)	5 (4.2)
IVB	2 (2.0)	1 (20.0)	4 (33.3)	7 (5.9)
Advanced stage	1 (1.0)	-	-	1 (0.8)
HSIL	6 (5.9)	-	-	6 (5.0)
Recurrent	3 (2.9)	-	2 (16.7)	5 (4.2)
Unstaged	2 (2.0)	-	-	2 (1.7)
Total	**102**	**5**	**12**	**119 (100)**

HIV = Human immunodeficiency virus

HSIL = High-grade squamous intraepithelial lesion

TABLE 7: Cancer of the Cervix: Distribution by Histological Type

Histological Type	Number	Percent
Squamous cell carcinoma	**81**	**68.1**
Well differentiated	3	2.5
Moderately differentiated	52	43.7
Poorly differentiated	16	13.4
No defined differentiation	10	8.4
Adenocarcinoma	**17**	**14.3**
Adenosquamous	**7**	**5.9**
Clear cell Adenocarcinoma	**1**	**0.8**
Small cell NE	**2**	**1.7**
HSIL	**9**	**7.6**
Other (Condylomatous CA)	**1**	**0.8**
Unknow	**1**	**0.8**
Total	**119**	**100**

NE = Neuroendocrine
CA = Carcinoma
HSIL = High-grade squamous intraepithelial lesion

TABLE 8: Treatment of Cancer of the Cervix

Treatment	Number	Percent
Surgery alone	**18**	**15.1**
Modified Radical hysterectomy	1	0.8
TAH	6	5.0
RHPL	6	5.0
Laparoscopic hysterectomy	4	3.4
Vaginal Hysterectomy	1	0.8
Chemotherapy alone	**11**	**9.2**
CCRT	**38**	**31.9**
RT alone	**3**	**2.5**
RT + brachytherapy	**7**	**5.9**
Brachytherapy	**2**	**1.7**
Combined treatment	**34**	**28.6**
Abandon hysterectomy + CCRT	1	0.8
TAH + CMT	1	0.8
TAH + RT+ brachytherapy	1	0.8
TAH + brachytherapy	3	2.5
VH +RT	1	0.8
RHPL + CCRT	11	9.2
RHPL + CMT	1	0.8
RHPL + RT	7	5.9
Modified RHPL+CCRT	1	0.8
BSO + CMT	1	0.8
BSO + CCRT	3	2.5
Laparoscopic Radical hysterectomy+RT	1	0.8
Laparoscopic hysterectomy+CCRT	1	0.8
Subtotal hysterectomy+CCRT	1	0.8
Others		
Follow-up	**2**	1.7
Denied treatment	**1**	0.8
Refer to other hospital for CMT	**1**	0.8
Palliative care	**2**	1.7
Total	**119**	**100**

TAH = Total abdominal hysterectomy
RHPL = Radical hysterectomy with bilateral pelvic lymphadenectomy
RT = Radiation therapy
CCRT = Concurrent chemoradiation
CMT = Chemotherapy
BSO = Bilateral salpingo-oophorectomy
BPL = Bilateral pelvic lymphadenectomy
HDR = High dose-rate brachytherapy

Cancer of the Ovary

➢ Distribution by

- Age
- Parity
- Histology
- Histology Subtype
  - Epithelial Group
  - Germ Cell Tumor Group
  - Sex cord-stromal Group
  - Other Groups
- Stage
  - Epithelial Group
  - Germ Cell Group
  - Sex cord-stromal Group
  - Other Groups
- Stage and Histology
- Treatment

TABLE 9: Cancer of the Ovary: Age Distribution

Age	Number	Percent
≤20	5	10.2
21-30	4	8.2
31-40	3	6.1
41-50	9	18.4
51-60	14	28.6
61-70	9	18.4
71-80	4	8.2
>80	1	2.0
Total	**49**	**100**

Minimum age 13.0 years, Maximum age 83.0 years
Mean age 50.1 ± 17.3 years

TABLE 10: Cancer of the Ovary: Parity Distribution

Parity	Number	Percent
0	28	57.1
1	3	6.1
2	11	22.5
3	5	10.2
4	1	2.0
5	1	2.0
Total	**49**	**100**

TABLE 11: Cancer of the Ovary: Histological Distribution

Histology	Number	Percent
Epithelium	45	91.8
Germ cell	4	8.2
Total	**49**	**100**

TABLE 12: Epithelial Ovarian Cancer: Histological Subtype Distribution

Histological Subtype	Number	Percent
Serous adeno CA	13	28.9
Serous LMP	4	8.9
Clear cell CA	11	24.4
Endometrioid CA	4	8.9
Mucinous LMP	6	13.3
Seromucinous LMP	1	2.2
Adeno CA	4	8.9
Mixed HGSA+Endometrioid adeno CA	1	2.2
Mixed Endometrioid+clear cell	1	2.2
Total	**45**	100

CA = Carcinoma
LMP = Low malignant potential
SCCA = Squamous cell carcinoma

TABLE 13: Ovarian Germ Cell Tumor (GCT): Histological Subtype Distribution

Histological Subtype	Number	Percent
Immature teratoma	2	50.0
Dysgerminoma	2	50.0
Total	**4**	**100**

TABLE 14: Epithelial Ovarian Cancer: Stage Distribution

Stage	Number	Percent
IA	2	4.4
IC	3	6.7
IC1	4	8.9
IC2	3	6.7
IC3	2	4.4
IIB	3	6.7
III	1	2.2
IIIC	6	13.3
IVB	3	6.7
Advanced stage	11	24.4
Not staged	7	15.6
Total	**45**	**100**

TABLE 15: Germ Cell Ovarian Cancer: Stage Distribution

Stage	Number	Percent
IA	1	25.0
IIIA2	1	25.0
IC1	1	25.0
IC2	1	25.0
Total	4	**100**

TABLE 16: Ovarian Cancer: Stage and Histology Distribution

	Epithelial	Percent	Germ cell	Percent
IA	2	4.3	1	25.0
IC	3	6.5	-	-
IC1	4	8.7	1	25.0
IC2	3	6.5	1	25.0
IC3	3	6.5	-	-
IIB	3	6.5	-	-
III	1	2.2	-	-
IIIA2	-	-	1	25.0
IIIC	6	13.0	-	-
IVB	3	6.5	-	-
Advanced stage	11	23.9	-	-
Unstaged	7	15.2	-	-
Total	**45**	**100**	**4**	**100**

TABLE 17: Cancer of the Ovary: Primary Treatment and Adjuvant Chemotherapy

Treatment	Number	Percent
Complete SSP with adjuvant chemotherapy	8	16.3
Complete SSP without adjuvant chemotherapy	1	2.0
Incomplete SSP with adjuvant chemotherapy	24	49.0
Incomplete SSP without adjuvant chemotherapy	9	18.4
NAC + Incomplete SSP with adjuvant chemotherapy	4	8.2
Chemotherapy only	3	6.1
Total	**49**	**100**

SSP = Surgical staging procedure
NAC = Neoadjuvant chemotherapy

TABLE 18: Ovarian Cancer: Outcome of Treatment

Outcome	Number	Percent
Under follow-up without disease	18	34.6
Under follow-up with disease	1	1.9
Under follow-up with partial response	1	1.9
During treatment	14	26.9
During treatment with progression/persistence of disease	7	13.5
Lost to follow-up	5	9.6
Refer to provincial hospital for chemotherapy	2	3.8
Palliative care	1	1.9
Total	**49**	**100**

Cancer of the Uterine Corpus

➢ Distribution by

- Age
- Menopausal Status
- Underlying Medical Diseases
- Parity
- Clinical Staging
- Surgical Staging
- Histology
- Treatment

TABLE 19: Cancer of the Corpus: Age Distribution

Age	Number	Percent
≤40	2	2.7
41-50	12	16.2
51-60	31	41.9
61-70	17	23.0
71-80	9	12.2
81-90	3	4.1
Total	**74**	**100**

Minimum age 31.0 years, Maximum age 88.0 years
Mean age 59.2 ± 10.7 years

TABLE 20: Cancer of the Corpus: Distribution by Menopausal Status

Menopausal Status	Number	Percent
Yes	58	78.4
No	16	21.6
Total	**74**	**100**

TABLE 21: Cancer of the Uterine Corpus: Distribution by Underlying Diseases

Medical disease	Number	Percent
None	26	35.1
asthma	2	2.7
Hypertension	7	9.5
Hypertension + DM	4	5.4
Hypertension + DM+DLP	4	5.4
Hypertension + DM+thyrotoxicosis	1	1.4
Hypertension+ Thyrotoxicosis+RHD+old MI	1	1.4
Hypertension+old CVA+AR	1	1.4
Hypertension +DLP	10	13.5
Hypertension + DM+CKD	1	1.4
Hypertension + DM+CKD+Gout+Hx.CA breast	1	1.4
Hypertension +DLP+AF	1	1.4
Hypertension + DM + dyslipidemia	1	1.4
Hypertension + hypothyroid+myxedema	1	1.4
Hypertension +DLP+thalassemia trait	1	1.4
Hypertension + DLP+DVT+blindness+	1	1.4
DLP	4	5.4
DM+DLP	1	1.4
Hx.multinodular goiter	1	1.4
Thyrotoxicosis	2	2.7
Paraplegia	1	1.4
Osteoporosis	1	1.4
Hx. CA Thyroid	1	1.4
Total	**74**	**100**

AF = Atrial fibrillation
AR = Aortic Regurditation
CA = Cancer
CKD = Chronic kidney disease
CVA = Cerebrovascular accident
DLP = Dyslipidemia
DM = Diabetes mellitus
DVT = Deep vein thrombosis
RHD = Rheumatic heart disease

TABLE 22: Cancer of the Uterine Corpus: Distribution by Parity

Parity	Number	Percent
0	31	41.9
1	8	10.8
2	23	31.1
3	5	6.8
4	3	4.1
5	1	1.4
6	1	1.4
8	1	1.4
unknown	1	1.4
Total	**74**	**100**

TABLE 23: Cancer of the Uterine Corpus: Distribution by Surgical Staging

	Stage	Number	Percent
I	I	1	1.4
	IA	24	32.4
	IA1	1	1.4
	IB	15	20.3
	IB1	1	1.4
II	II	2	2.7
	IIA	1	1.4
	IIB	1	1.4
III	IIIA	5	6.8
	IIIB	2	2.7
	IIIC	7	9.5
IV	IV	2	2.7
	IVB	8	10.8
Recurrent		1	1.4
Unstaged		3	4.1
Total		**74**	**100**

TABLE 24: Cancer of the Uterine Corpus: Histologic Distribution

Histology Type	Number	Percent
Endometrioid adeno CA	50	67.6
Grade I	19	25.7
Grade II	16	21.6
Grade III	13	17.6
Not define	2	2.7
High-grade Serous adenoCA	8	10.8
Mixed type	6	8.1
Clear cell adenoCA	1	1.4
Leiomyosarcoma	4	5.4
Adenocarcinoma	1	1.4
Low grade ESS	2	2.7
Dedifferentiated carcinoma	1	1.4
high-grade malignant neoplasm of endometrium	1	1.4
Total	**74**	**100**

CA = Carcinoma
ESS = Endodermal stromal sarcoma

TABLE 25: Treatment of Corpus Cancer

Treatment	Number	Percent
Complete SSP	19	25.7
NAC:CMT+Complete SSP +Adj.CMT	2	2.7
Complete SSP + Chemotherapy	6	8.1
Complete SSP + Radiation therapy + Brachytherapy	2	2.7
Complete SSP + Brachytherapy	6	8.1
Complete SSP + Sequential CMT-RT	7	9.5
Complete SSP +sandwich CMT-RT	1	1.4
Chemotherapy	2	2.7
Chemotherapy +RT	1	1.4
CCRT	1	1.4
RT+VBT	2	2.7
Incomplete SSP	11	14.9
NAC:CMT+Inomplete SSP +Adj.CMT	2	2.7
Incomplete SSP + Chemotherapy	7	9.5
Incomplete SSP +sequential CMT-RT	1	1.4
Incomplete SSP + Radiation therapy + Brachytherapy	1	1.4
Incomplete SSP +EBRT+ Brachytherapy	1	1.4
Incomplete SSP + Brachytherapy	1	1.4
Incomplete SSP +WPRT+Brachytherapy	1	1.4
Total	**74**	**100**

Adj = Adjuvant
NAC = Neoadjuvant chemotherapy
CMT = Chemotherapy
SSP = Surgical staging procedure
WPRT = Whole pelvis radiotherapy

EBRT = External beam radiotherapy
CCRT = Concurrent chemoradiation
RT = Radiation therapy
VBT = Vaginal Brachytherapy

TABLE 26: Outcome of Treatment of Corpus Cancer

Outcome	**Number**	**Percent**
Under follow-up without disease	41	55.4
During treatment	13	17.6
During treatment with progression/persistence of disease	3	4.1
During treatment with disease	4	5.4
Refer to other hospital for treatment	3	4.1
Palliative care	2	2.7
Loss to follow-up	5	6.8
Dead	3	4.1
Total	**74**	**100**

Cancer of the Vulva

- **Distribution by**
  - Age
  - Stage
  - Histology
  - Treatment

TABLE 27: Cancer of the Vulva: Age Distribution

Age	Number	Percent
41-50	2	50.0
61-70	2	50.0
Total	**4**	**100**

Minimum age 46.0 years, Maximum age 89.0 years
Mean age 59.8 ± 17.3 years

TABLE 28: Cancer of the Vulva: Stage Distribution

Stage	Number	Percent
HSIL	1	25.0
II	1	25.0
IIIB	1	25.0
IVB	1	25.0
Total	4	**100**

TABLE 29: Cancer of the Vulva: Histological Type Distribution

Histological Type distribution	Number	Percent
Squamous cell carcinoma	**3**	**75.0**
Well differentiated	2	50.0
Moderately differentiated	1	25.0
HSIL	**1**	**25.0**
Total	**4**	**100**

HSIL = High-grade squamous intraepithelial lesion

TABLE 30: Treatment of Cancer of the Vulva

Treatment	Number	Percent
BGND+CCRT	2	50.0
Laservaporization	1	25.0
BGND+Refer to other hospital	1	25.0
Total	4	**100**

CCRT = Concurrent chemoradiation
BGND = Bilateral groin node dissection

Cancer of the Vagina

- **Distribution by**
  - Age
  - Stage
  - Histology
  - Treatment

TABLE 31: Cancer of the Vagina

No	Age	Stage	Histology	Treatment	Outcome
1	51	III	Adeno squamous cell CA	NAC:CMT(cis+taxol)→CCRT(cis+WPRT+VBT)	Good, under follow-up without disease
2	60	II	SCCA,MD	CCRT(Cis+WPRT+VBT)	Good, under follow-up without disesae
3	66	HSIL	SCCA	VBT	Good, under follow-up without disease

NAC = Neoadjuvant chemotherapy
CA = Carcinoma
CMT = Chemotherapy
CCRT = Concurrent chemoradiation
SCCA = Squamous cell carcinoma
WPRT = Whole pelvis radiotherapy
VBT = Vaginal brachytherapy

Cancer of the Fallopian Tube

TABLE 32: Cancer of the Fallopian Tube 2021

Data	**Case 1**	**Case 2**	**Case 3**
Age	38	51	74
Marital status	Married	Married	single
Parity	2-0-0-2	2-0-0-2	0-0-0-0
Presenting symptoms	Addominal distension	Abdominal distension	Pelvic mass
Stage	Advanced	IVA	IVB
Histology	AdenoCA	High grade serous adenoCA	High grade serous adenoCA
Treatment	PTx2 → PD → palliative care	TAH with BSO with LN sampling with peritoneal washing with partial omentectomy →Adjvant PT x6	TAHwith BSO with BPND with partial omentectomy with peritoneal washing with appendectomy →adjuvant PT
Outcome	PD→palliative care	Good under follow-up without disease	During treatment

Data	**Case 4**	**Case 5**	**Case 6**
Age	44	55	46
Marital status	Married	single	Married
Parity	0-0-0-0	0-0-0-0	0-0-1-0
Presenting symptoms	Pelvic pain	Pelvic pain	Pelvic mass
Stage	IIIC	IIIC	IIA
Histology	High grade serous adenoCA	High grade serous adenoCA	High grade serous adenoCA
Treatment	TAHwith BSO with ascites collection → adjuvant PT+BEV	TAHwith BSO with Rt.PND → adjuvant PT+BEV	TAH with BSO with BPNDwith PANS with ascites collectionwith partial omentectomy with appendectomy→ adjuvant PTx6
Outcome	During treatment	During treatment	Good, under follow-up without diaease

Data	**Case 7**	**Case 8**	**Case 9**
Age	65	57	62
Marital status	Married	Married	Married
Parity	0-0-0-0	3-0-0-3	2-0-0-2
Presenting symptoms	Pelvic mass with pelvic pain	Abdominal distension	Pelvic mass with pelvic pain
Stage	IIIC	Advanced	IIIC
Histology	High grade serous adenoCA	High grade serous adenoCA	High grade serous adenoCA
Treatment	NAC:PT→TAHwiyh BSO with lysis adhesion with omentectomy→ Adjuvant PT+BEV	NAC:PT→TAH with BSO with lysis adhesion with partial omentectomy →Adjuvant PT +BEV	TAH with BSO with debulking tumor with small bowel resection with primary small bowel anastomosispartial omentectomy, ascites collectio→ + adjuvant PT+BEVx1
Outcome	During treatment	During treatment	During treatment

Data	**Case 10**	**Case 11**
Age	62	51
Marita status	Married	Married
Parity	2-0-0-2	0-0-0-0
Presenting symptoms	Pelvic pain	Pelvic mass
Stage	IIB	recurrent
Histology	High grade serous adenoCA	High grade serous adenoCA
Treatment	TAH with BSO with omentum biopsy → Adjuvant PT	CSS with debulking tum with Lysis adhesion with ascites collection →Adjuvant PT
Outcome	During treatment	Good, under follow-up without diaease

BPND = Bilateral pelvic node dissection
BPNS = Bilateral pelvic node sampling
BSO = Bilateral salpingo-oophorectomy
CA = Carcinoma
Lt = Left
LN = Lymnode
NAC = Neoadjuvant chemotherapy
PAND = Para-aortic node dissection
PND = pelvic node dissection
PT = Paclitaxel and Carboplatin
PD = Progressive disease
Rt = Right
SO = Salpingo-oophorectomy
TAH = Total abdominal hysterectomy

Cancer of the Peritoneum

TABLE 33: Cancer of the Peritoneum 2021

Data	**Case 1**	**Case 2**
Age	89	46
Marital status	Married	single
Parity	unknow	0-0-0-0
Presenting symptoms	Pelvic pain	Pelvic mass
Stage	IIIC	IIIB(recurrent)
Histology	High grade serous adeno CA	Endometrioid adeno CA
Treatment	NAC:PT→TAH with BSO with partial omentectomy with PANS with appendectomy → Adjuvant PT+BEV	TLH with Left SO with LND → Adjuvant Gemcitabine→lipodox
Outcome	During treatment	Under FU with stable disease

Data	**Case 3**	**Case 4**
Age	56	48
Marital status	Married	Married
Parity	3-0-0-3	0-0-0-0
Presenting symptoms	Abdominal distension	Abdominal distension
Stage	Advanced	IIIC
Histology	AdenoCA	High grade serous adeno CA
Treatment	NAC:PT→TAH with BSO with total omentectomy with lysis adhesion→ Adjuvant PT	TLH with BSO with partial omentectomy → Adjuvant PT+BEV
Outcome	During treatment	During treatment

CA = Carcinoma
TAH = Total abdominal hysterectomy
BSO = Bilateral salpingo-oophorectomy
PT = Paclitaxel and Carboplatin
NAC = Neoadjuvant chemotherapy
SO = Salpingo-oophorectomy
BEV = Bevacizumab

Gestational Trophoblastic Disease

- Gestational Trophoblastic Tumor

TABLE 34: Gestational Trophoblastic Tumors in 2021

No	Age (year)	Initial hCG titer	Prognosis Classification	Diagnosis	FIGO	Treatment	Result
1	22	183362	MGTT, poor prognosis, lung metastasis	GTN	III	EMA-CO→ TP/TE	During treatment
2	27	2144	NMGTT, Good prognosis	GTN	I	MTX -FA→ Actinomycin D	Good→Follow-up β-HCG
3	41	838	NMGTT, good prognosis,	GTN	I	MTX -FA→ Actinomycin D	Good→Follow-up β-HCG →refer to other hospital
4	48	264000	NMGTT Good prognosis	GTN	I	MTX-FA → Actinomycin D	During treatment
5	36	7617	NMGTT Good prognosis	GTN	1	MTX	Good→Follow-up β-HCG

EMA-CO = Etoposide + Methotrexate + Actinomycin D + Cyclophosphamide + Vincristine

GTN = Gestational trophoblastic tumor

HCG = Human chorionic gonadotropin

MGTT = Metastatic gestational trophoblastic tumor

MTX = Methotrexate

MTX-FA = Methotrexate + Folinic acid

NMGTT = Non-metastatic gestational trophoblastic tumor

TP/TE =Paclitaxel,Etoposide,Cisplatin

SECTION II

- **Medical Personnel and Facilities**
- **Diagnostic Procedures and Gynecologic Oncology Operations**
- **Publications & Presentations**

Medical Personnel and Facilities

TABLE 35: Medical Personnel and Facilities in Division of Gynecologic Oncology, Chiang Mai University

Personnel and Facilities	Number
Medical doctor	8
General nurse	21
Practical nurse	11
Helper	8
Research nurse	2
Research assistant	1
Inpatient bed	20
One-day chemotherapy bed	19
Outpatient bed	7
Colposcope	3
Cryosurgery set	1
Radiosurgery (Surgitron)	3

Funds (**กองทุนของหน่วยมะเร็งวิทยานรีเวช**)

1. Gynecologic Cancer Fund (กองทุนมะเร็งทางนรีเวช)
2. Cervical Cancer Surgery Fund (กองทุนผ่าตัดมะเร็งปากมดลูก)

1st Year Fellow

-Varisa Chuenchitkultavorn, MD

-Chanita Lertaroonchai, MD

-Kankanok pooltim, MD

2nd Year Fellow

-Jongpeeti Wudtisan, M.D.

-Thunwipa Tuscharoenporn,, MD

- Muangloei Rungoutok, MD

Radiation Oncologists

1. Professor Imjai Chitapanarux, MD
2. Associate Professor Ekkasit Tharavijitkul, MD
3. Somwilai Mayurasakorn, MD
4. Pitchayaponne Klunklin, MD
5. Wimrak Onchan, MD

Gynecologic Pathologists

1. Associate Professor Sumalee Siriaunkgul, MD
2. Professor Surapan Khunamornpong, MD
3. Associate Professor Jongkolnee Settakorn, MD
4. Assistant Professor Kornkanok Sukapan, MD
5. Tip Pongsuwareeyakul, MD

Medical Oncologists

1. Assistant Professor Busyamas Chewaskulyong, MD
2. Associate Professor Chaiyut Charoentum, MD
3. Thatthamn Suksomboon charoen, MD

Diagnostic Procedures and Operations

TABLE 36: Diagnostic Procedures and Operations for Cervical Neoplasia

Procedures & Operations	Number
Colposcopy	389
LEEP	60
Simple hysterectomy	7
Modified hysterectomy & PL	1
Radical hysterectomy & PL	6
Laparoscopic hysterectomy	4

LEEP = Loop electrosurgical excision procedure
PL = Pelvic lymphadenectomy

TABLE 37: Operations for Ovarian, Corpus, and Vulvar Cancer

Operations	Number
CRS for ovarian cancer	48
CRS for fallopian tube cancer	10
CRS for peritoneal cancer	4
Surgical staging for corpus cancer	45
Laparoscopic hysterectomy for corpus cancer	9
BGND for vulvar cancer	3
Laservapolization for vulvar cancer	1

CRS = Cytoreductive surgery
PL = Pelvic lymphadenectomy
BGND = Bilateral groin node dissection

PUBLICATIONS & PRESENTATIONS

2021

Transferability of the Early-stage Ovarian Malignancy (EOM) Score: An External Validation Study That Includes Advanced-stage and Metastatic Ovarian Cancer

Phinyo P, Patumanond J, Saenrungmuaeng P, Chirdchim W, Pipanmekaporn T, Tantraworasin A, Tongsong T, **Tantipalakorn C**

Objective: To validate the diagnostic performance of the Early-stage Ovarian Malignancy (EOM) score in an external dataset that includes advanced-stage and metastatic ovarian cancer.

Materials and Methods: The data from two cross-sectional cohorts were used in the statistical analysis. The development dataset of the EOM score was collected in Phrapokklao Hospital between September 2013 and December 2017. The validation dataset was collected in Maharaj Nakorn Chiang Mai Hospital between April 2010 and March 2018. The internal and external performance of the EOM score was evaluated in terms of discrimination via area under the receiver-operating characteristic curve (AuROC) and calibration.

Results: There were 270 and 479 patients included in the development and validation datasets, respectively. The prevalence of ovarian malignancy was 20.0% (54/270) in the development set and 30.3% (145/479) in the validation set. The EOM score had excellent discriminative ability in both the development and validation sets (AuROC 88.0 (95% CI 82.6, 93.9) and 88.0 (95% CI 84.3, 91.4), respectively). The EOM score also showed good calibration in both datasets.

Conclusion: The EOM score had consistent diagnostic performance in the external validation data. It is recommended for use as a triage tool in patient referrals instead of the RMI in settings where experienced sonographers are not available.

Published in: Archives of gynecology and obstetrics. 2021;303(6):1539-1548.

DOI: 10.1007/s00404-020-05955-y

Diagnostic Added-Value of Serum CA-125 on the IOTA Simple Rules and Derivation of Practical Combined Prediction Models (IOTA SR X CA-125)

Phinyo P, Patumanond J, Saenrungmuaeng P, Chirdchim W, Pipanmekaporn T, Tantraworasin A, Tongsong T, **Tantipalakorn C**.

Objective: This study aimed to evaluate the diagnostic added-value of serum CA-125 to the International Ovarian Tumor Analysis (IOTA) Simple Rules in order to facilitate differentiation between malignant and benign ovarian tumors before surgery.

Materials and Methods: A secondary analysis of a cross-sectional cohort of women scheduled for surgery in Maharaj Nakorn Chiang Mai Hospital between April 2010 and March 2018 was carried out. Demographic and clinical data were prospectively collected. Histopathologic diagnosis was used as the reference standard. Logistic regression was used for development of the model. Evaluation of the diagnostic added-value was based on the increment of the area under the receiver operating characteristic curve (AuROC).

Results: One hundred and forty-five women (30.3%) out of a total of 479 with adnexal masses had malignant ovarian tumors. The model that included information from the IOTA Simple Rules and serum CA-125 was significantly more superior to the model that used only information from the IOTA Simple Rules (AuROC 0.95 vs. 0.89, $p < 0.001$ for pre-menopause and AuROC 0.98 vs 0.83, $p < 0.001$ for post-menopause).

Conclusion: The IOTA SR X CA-125 model showed high discriminative ability and is potentially useful as a decision tool for guiding patient referrals to oncologic specialists.

Published in: Diagnostics (Basel). 2021;11(2):173.

DOI: 10.3390/diagnostics11020173

Health-related Quality of Life for Early-stage Cervical Cancer Survivors After Primary Radical Surgery Followed by Radiotherapy Versus Radical Surgery Alone

Suvannasarn R, Muangmool T, Wongpakaran N, **Charoenkwan K**.

This study compared the quality of life (QoL) of 265 stage IA2-IIA cervical cancer patients treated with radical surgery alone (group 1: 137 patients) versus those who underwent primary radical surgery followed by radiotherapy (group 2: 128 patients) and identified clinical characteristics that predict the poor quality of life. All participants completed quality of life questionnaires: EORTC QLQ-C30 and CMU cervical cancer QoL. For the EORTC QLQ-C30, the study groups were comparable regarding global health status/QoL scale and summary scores. Group 1 participants had better scores on the physical functioning domain and some symptom scales/items. For the CMU Cervical Cancer QoL, group 1 participants had better scores on gastrointestinal, lymphatic, and sexual/hormonal domains. In multivariable analysis, adjuvant radiation was consistently associated with poor quality of life in most domains. In general, early-stage cervical cancer survivors had a satisfactory quality of life. The clinical significance of the quality of life score differences between the study groups remains debateable.

Published in: Journal of obstetrics and gynaecology. 2021;42(2):1-8.

DOI: 10.1080/01443615.2021.1945013

Risk Prediction of Second Primary Endometrial Cancer in Obese Women: A Hospital-based Cancer Registry Study

Chang CC, Chen CC, **Cheewakriangkrai C**, Chen YC, Yang SF.

Due to the high effectiveness of cancer screening and therapies, the diagnosis of second primary cancers (SPCs) has increased in women with endometrial cancer (EC). However, previous studies providing adequate evidence to support screening for SPCs in endometrial cancer are lacking. This study aimed to develop effective risk prediction models of second primary endometrial cancer (SPEC) in women with obesity (body mass index (BMI) > 25) and included datasets on the incidence of SPEC and the other risks of SPEC in 4480 primary cancer survivors from a hospital-based cancer registry database. We found that obesity plays a key role in SPEC. We used 10 independent variables as predicting variables, which correlated to obesity, and so should be monitored for the early detection of SPEC in endometrial cancer. Our proposed scheme is promising for SPEC prediction and demonstrates the important influence of obesity and clinical data representation in all cases following primary treatments. Our results suggest that obesity is still a crucial risk factor for SPEC in endometrial cancer.

Published in: International Journal of Environmental Research and Public Health. 2021;18(17):55-60.

DOI: 10.3390/ijerph18178997

May-thurner Syndrome Is Aggravated by Pregnancy

Traisrisilp K, **Manopunya M**, Srisuwan T, Chankhunaphas W, Tongsong T.

This study aims to emphasize that asymptomatic patients with undiagnosed and asymp-tomatic May-Thurner syndrome (MTS) may firstly develop severe compression during pregnancy. A 40-year-old woman, G1P0, at 22 weeks of twin gestation presented with left lower extremity edema and pain. One twin was structurally normal while the other had bilateral renal agenesis with oligohy-dramnios. Magnetic resonance venography (MRV) revealed severe compression of the left iliac vein by the right iliac artery without evidence of deep vein thrombosis (DVT). Conservative treatment with anticoagulant prophylaxis was instituted throughout the rest of pregnancy and postpartum period. She was also complicated with severe pre-eclampsia, a cesarean section was performed due to a prolapsed cord at 27 weeks of gestation, and she gave birth to a surviving baby weighing 1100 g. In conclusion, this case report provides evidence that pregnancy can disclose a subtle May-Thurner anatomy to be symptomatic without DVT. Successful pregnancy outcomes could be achieved with conservative treatment and anticoagulant prophylaxis.

Published in: Medicina (Lithuania). 2021;57(3):1-6.

DOI: 10.3390/medicina57030222

The Effects of Neurofeedback on Executive Functioning in Children With ADHD: A Meta-Analysis

Louthrenoo O, Boonchooduang N, Likhitweerawong N, **Charoenkwan K**, Srisurapanont M.

Objective: Possible beneficial effects of neurofeedback in improving ADHD functional outcomes have been increasingly reported. This meta-analysis aimed to evaluate the relationship between neurofeedback and executive functioning in children with ADHD.

Materials and Methods: PubMed, EMBASE, EBSCO, Web of Science, and Cochrane databases were searched to identify studies reporting the effects of neurofeedback on executive functioning, including response inhibition, sustained attention, and working memory, assessed by neuropsychological tests. Only randomized controlled studies of children aged 5 to 18 years were included using a random-effects model.

Results: Ten studies were included. The effects of neurofeedback were not found on three domains of executive functions. A meta-regression analysis revealed a trend of numbers of neurofeedback sessions positively associated with response inhibition ($p = .06$).

Conclusion: Results did not show the benefits of neurofeedback on executive functions assessed by neuropsychological tests. Future studies should focus on standard neurofeedback protocols, the intensity of intervention, and neuropsychological outcomes.

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Sexual Dysfunction in Transgender People: A Systematic Review

Mattawanon N, **Charoenkwan K**, Tangpricha V.

Transgender people may choose to affirm their gender identity with gender-affirming hormone therapy (GAHT) and/or gender-affirming surgery (GAS). The effects of GAHT and GAS on sexual health in transgender people have not been well elucidated. This systematic review aimed to appraise the current scientific literature regarding sexual desire, arousal, orgasm, pain, and satisfaction in transmen and transwomen before, during, and after gender transition. Overall, sexual dysfunction is common in both transmen and transwomen. GAHT and GAS may help to improve sexual satisfaction. More studies that focus on sexual health in the transgender population are urgently needed.

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Platinum-based Chemotherapy and Bevacizumab Instigate the Destruction of Human Ovarian Cancers via Different Signaling Pathways

Kingnate C, **Charoenkwan K**, Kumfu S, Apaijai N, Jaiwongkam T, Khunamornpong S, Chattipakorn N, Chattipakorn SC.

The standard chemotherapy regimens of ovarian cancer are platinum-based chemotherapy (carboplatin and paclitaxel) and bevacizumab (BEV). However, the effects of BEV alone or combined with carboplatin and paclitaxel on mitochondrial dynamics, mitochondrial function, mitophagy, apoptosis, inflammation and vascular endothelial growth factor (VEGF) in human ovarian cancer mitochondria and cells have not yet been investigated. Therefore, we aimed to test the hypothesis that 1) platinum-based chemotherapy and BEV equally damage isolated mitochondria from human ovarian cancers, and ovarian cancer cells through inducing mitochondrial dynamics dysregulation, mitochondrial dysfunction, increased mitophagy and apoptosis, as well as altered inflammation and VEGF; and 2) combined therapies exert greater damage than monotherapy. Each isolated human ovarian cancer mitochondria (n = 16) or CaOV3 cells (n = 6) were treated with either platinum-based chemotherapy (carboplatin 10 μM and paclitaxel 5 μM), BEV (2 mg/mL) or combined platinum-based chemotherapy and BEV for 60 min or 24 h, respectively. Following the treatment, mitochondrial dynamics, mitochondrial function, mitophagy, apoptosis, cytotoxicity, inflammation and VEGF were determined. Platinum-based chemotherapy caused ovarian cancer mitochondria and cell damage through mitochondrial dysfunction, increased cell death with impairment of membrane integrity, and enhanced VEGF reduction, while BEV did not. BEV caused deterioration of ovarian cancer mitochondria and cells through mitochondrial-dependent apoptosis, but it had no effect on cell viability. Interestingly, combined platinum-based chemotherapy and BEV treatments had no addictive effects on all parameters except mitochondrial maximal respiration, when compared to monotherapy. Collectively, these findings suggest that platinum-based chemotherapy and BEV caused human ovarian cancer mitochondrial and cell damage through different mechanisms.

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Metabolic Reprogramming in Epithelial Ovarian Cancer

Nantasupha C, Thonusin C, **Charoenkwan K**, Chattipakorn S, Chattipakorn N.

Cancer cells usually show adaptations to their metabolism that facilitate their growth, invasiveness, and metastasis. Therefore, reprogramming the energy metabolism is one of the current key foci of cancer research and treatment. Although aerobic glycolysis-the Warburg effect-has been thought to be the dominant energy metabolism in cancer, recent data indicate a different possibility, specifically that oxidative phosphorylation (OXPHOS) is the more likely form of energy metabolism in some cancer cells. Due to the heterogeneity of epithelial ovarian cancer, there are different metabolic preferences among cell types, study types (in vivo/in vitro), and invasiveness. Current knowledge acknowledges glycolysis to be the main energy provider in ovarian cancer growth, invasion, migration, and viability, so specific agents targeting the glycolysis or OXPHOS pathways have been used in previous studies to attenuate tumor progression and increase chemosensitization. However, chemoresistant cell lines exert various metabolic preferences. This review comprehensively summarizes the information from existing reports which could together provide an in-depth understanding and insights for the development of a novel targeted therapy which can be used as an adjunctive treatment to standard chemotherapy to decelerate tumor progression and decrease the epithelial ovarian cancer mortality rate.

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Effect of Elastic Abdominal Binder on Pain and Functional Recovery Following Gynecologic Cancer Surgery: A Randomized Controlled Trial

Chantawong N, **Charoenkwan K**.

Background and Objectives: Clinicians have been using elastic abdominal binder for sta-bilizing incision site after major abdominal surgery. However, the benefits of that practice have never been formally assessed. The aim of this study was to examine the effects of the use of elastic abdominal binder on postoperative pain and recovery of gynecologic cancer patients.

Materials and Methods: One-hundred and nine women diagnosed with cervical, endometrial, or ovarian cancer, who underwent open abdominal surgery were assigned randomly into two groups: intervention (56 patients) and control (53 patients). The women in the intervention group applied abdominal binder from postoperative day 1. For the control group, the women did not wear the binder or similar devices. The primary outcomes were pain and functional recovery. Subgroup analysis on participants age ≥ 50 was also performed.

Results: For the entire study cohort, the baseline, postoperative day 1, and postoperative day 2 pain scores in the intervention group were significantly lower than the control group. However, there was no significant difference between the groups for postoperative day 3 pain score and for the change in pain scores from the baseline value. Of note, the age ≥ 50 subgroup represented a more balanced cohort with comparable baseline pain scores between the study groups. For this population, the pain scores for postoperative day 1–3 were significantly lower in the intervention group. The intervention group had a longer six-minute walking distance on postoperative day 3 with a trend toward a smaller difference in the day 3 distance from the baseline.

Conclusions: The potential benefits of abdominal binder use in reducing postoperative pain and improving functional recovery after open gynecologic cancer surgery could be demonstrated only in those age ≥ 50.

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iPMI: Machine Learning-Aided Identification of Parametrial Invasion in Women with Early-Stage Cervical Cancer

Charoenkwan P, Shoombuatong W, **Nantasupha C**, Muangmool T, **Suprasert P**, **Charoenkwan K**.

Radical hysterectomy is a recommended treatment for early-stage cervical cancer. However, the procedure is associated with significant morbidities resulting from the removal of the parametrium. Parametrial cancer invasion (PMI) is found in a minority of patients but the efficient system used to predict it is lacking. In this study, we develop a novel machine learning (ML)-based predictive model based on a random forest model (called iPMI) for the practical identification of PMI in women. Data of 1112 stage IA-IIA cervical cancer patients who underwent primary surgery were collected and considered as the training dataset, while data from an independent cohort of 116 consecutive patients were used as the independent test dataset. Based on these datasets, iPMI-Econ was then developed by using basic clinicopathological data available prior to surgery, while iPMI-Power was also introduced by adding pelvic node metastasis and uterine corpus invasion to the iPMI-Econ. Both 10-fold cross-validations and independent test results showed that iPMI-Power outperformed other well-known ML classifiers (e.g., logistic regression, decision tree, k-nearest neighbor, multi-layer perceptron, naive Bayes, support vector machine, and extreme gradient boosting). Upon comparison, it was found that iPMI-Power was effective and had a superior performance to other well-known ML classifiers in predicting PMI. It is anticipated that the proposed iPMI may serve as a cost-effective and rapid approach to guide important clinical decision-making.

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Risk of High-Grade Cervical Lesions in Atypical Squamous Cells of Undetermined Significance (ASC-US) Cytology: Comparison between HIV-Infected and HIV-Negative Women

Srisomboon S, **Tantipalakorn C**, Muangmool T, **Srisomboon J**.

Background and objective: Women with human immunodeficiency virus (HIV) infection have an increased risk of HPV infection, cervical neoplasia. This study was undertaken to compare the risk of having high-grade cervical lesions defined as cervical intraepithelial neoplasia grade 2 or worse (CIN2+) in HIV-infected versus HIV-uninfected women who had atypical squamous cells of undetermined significance (ASC-US) on cervical cytology.

Methods: Fifty-seven HIV-positive women aged 25-65 years with ASC-US cytology undergoing colposcopic examination between January 2008 and December 2020 at Chiang Mai University Hospital were reviewed. By matching 1:5 ratio, 285 HIV-negative women with ASC-US cytology in the same period were recruited as controlled subjects for comparison. The patient characteristics, HIV status, CD4 cell count within 6 months of colposcopy, antiretroviral therapy, parity, contraception, smoking history, number of sexual partners, and histopathology on cervical biopsy were analyzed.

Results: Mean age ± SD of the HIV-positive and HIV-negative groups was 44.28 ± 8.53 years and 44.28 ± 9.68 years, respectively. HIV-positive women were significantly less likely to use contraceptive methods (36.8 % versus 48.8 % in HIV-negative women; P = 0.002). HIV-infected women significantly had more sexual partners than HIV-uninfected women. Both groups had similar risk for CIN 2+ (5.3 % in HIV-positive women compared with 4.9 % in HIV-negative women; odds ratio [OR] = 1.08, 95% confidence interval [CI] = 0.30 –3.87). After adjustment for no contraception use and number of sexual partners, the risk of CIN2+ in HIV-infected women remained unchanged; adjusted OR= 1.15, 95% CI = 0.27-4.92, P= 0.846).

Conclusion: The risk of underlying high-grade cervical lesions in women with ASC-US on cervical cytology was approximately 5 %, regardless of HIV status.

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HIV-Infected Women with Low-Grade Squamous Intraepithelial Lesion on Cervical Cytology Have Higher Risk of Underlying High-Grade Cervical Intraepithelial Neoplasia

Sakdadech N, Muangmool T, **Srisomboon J**.

Objective: To evaluate the risk of histological high-grade cervical lesions defined as cervical intraepithelial neoplasia grade 2 or worse (CIN2+) in women with human immunodeficiency virus (HIV) infection who had low-grade squamous intraepithelial lesions (LSIL) on cervical cytological screening compared with HIV-uninfected women who had similar cytology.

Methods: 127 HIV-positive women aged 18–65 years with LSIL cytology undergoing colposcopic examination between January 2008 and December 2019 at Chiang Mai University Hospital were reviewed. By matching 1:1 ratio for age (±5 years) and examination time period (±12 months), 127 HIV-negative women with LSIL cytology in the same period were recruited as controlled subjects for comparison. The patients' characteristics, HIV status, CD4 counts, antiretroviral therapy, and histopathology on cervical biopsy were analyzed.

Results: HIV-infected women significantly had early sexual debut (age < 20 years) and more sexual partners (≥2) than HIV-uninfected women. The risk of underlying CIN2+ in HIV-infected women was significantly higher than that in HIV-negative women (20.5% vs. 9.4%, p = 0.021) with an odds ratio (OR) of 2.47 and 95% confidence interval (CI) = 1.18–5.14. After adjustment, the risk of underlying CIN2+ in HIV-infected women remained significantly higher than that in HIV-uninfected women (adjusted OR = 2.55, 95% CI = 1.11–5.82, p = 0.027).

Conclusion: Among women with LSIL on cervical cytology, the risk of underlying CIN2+ in HIV-infected women was approximately 2.5 times higher than those without HIV infection. Colposcopy is indicated particularly in the case of women with a long duration of HIV infection.

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Clinicopathological Prognostic Factors Influencing Survival Outcomes of Vulvar Cancer

Muangchang M**, Suprasert P**, Khunamornpong S.

Background: The prognostic factors for survival in squamous cell carcinoma (SCCA) of vulva cancer such as groin node involvement, postmenopausal status, tumor size, margin status, tumor grade, lymph vascular space invasion (LVSI) were reported in the past. However, with limited data from Southeast - Asian population, the present study was conducted to evaluate the clinicopathological prognostic factors for survival outcomes of this disease after treatment with surgery.

Methods: All SCCA vulva cancer patients who underwent surgery between January 2006 and December 2017 were reviewed. The clinicopathological factors were analyzed to identify the prognostic factors for the progression-free survival (PFS) and overall survival (OS) using the Kaplan-Meier method and Cox-Proportional Hazard model.

Results: One hundred twenty-five patients were recruited. The independent poor prognostic factors for PFS were groin node-positive and pathologic tumor diameter of more than 25 mm. Whereas postmenopausal status and groin node positive were independent poor prognostic factors for OS.

Conclusion: Groin node-positive was the only one independent poor prognostic factor for both PFS and OS. In addition, the tumor diameter longer than 25 mm. was independent poor prognostic factors for PFS while postmenopausal status was independent poor prognostic factors for OS. Special adjuvant treatment for patients with these factors should be further investigated.

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The Prevalence of Depressive Disorder and Its Association in Thai Cervical Cancer Patients

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Purpose The purpose of this study is to examine the prevalence, associated factors and quality of life associated with depressive disorder in cervical cancer patients. Patients and methods This cross-sectional study was carried out in a gynecologic oncology clinic of a university hospital in Northern Thailand from October 2018 to August 2019. Two-hundred cervical cancer patients were screened for depressive disorder using the nine-item Patient Health Questionnaire (PHQ-9), and psychiatrists interviewed eligible patients to confirm diagnoses. We measured the quality of life using questionnaires from the European Organisation for the Research and Treatment of Cancer: Quality of Life Questionnaire Core 30 (EORTC QLQC30) and Cervical Cancer Module 24 (EORTC QLQ-Cx24). Associated factors, including comorbidity, fatigue, and pain, were collected using the Charlson Comorbidity Index (CCI), the eleven-item Chalder Fatigue Scale (CFQ 11), and the visual analog scale (VAS) for pain, respectively. Results Twenty-seven (13.5%) cervical cancer patients were diagnosed with depressive disorder by psychiatrists according to the DSM-5. Depressive disorder was related to a worse quality of life in these patients. A binary logistic regression analysis revealed that depressive disorder among these patients was linked with these factors: High fatigue score (aOR: 1.35; CI: 1.18-1.53), high pain score (aOR: 1.25; CI: 1.02-1.54), no perception of social support, (aOR: 3.12; CI: 1.11-8.81), and no previous surgical treatment for cervical cancer (aOR: 2.99; CI: 1.08-8.29). Conclusion The depressive disorder prevalence was 13.5% in Northern Thai cervical cancer patients. In this demographic, cervical cancer patients-who reported high fatigue or pain scores, did not perceive social support, or had no previous cervical cancer surgery- were more likely to have depressive disorder.

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