ISSN 2307-8960 (online)

World Journal of *Clinical Cases*

World J Clin Cases 2022 October 26; 10(30): 10823-11213

Published by Baishideng Publishing Group Inc

World Journal of Clinical Cases

Contents

Thrice Monthly Volume 10 Number 30 October 26, 2022

REVIEW

MINIREVIEWS

ORIGINAL ARTICLE

Retrospective Cohort Study

Retrospective Study

Observational Study

World Journal of Clinical Cases

Thrice Monthly Volume 10 Number 30 October 26, 2022

Contents

World Journal of Clinical Cases

Thrice Monthly Volume 10 Number 30 October 26, 2022

Contents

World Journal of Clinical Cases

Thrice Monthly Volume 10 Number 30 October 26, 2022

Contents

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Rajeev Gurunath Redkar, FRCS, FRCS (Ed), FRCS (Gen Surg), MBBS, MCh, MS, Dean, Professor, Surgeon, Department of Pediatric Surgery, Lilavati Hospital and Research Centre, Mumbai 400050, Maharashtra, India. rajeev.redkar@gmail.com

AIMS AND SCOPE

The primary aim of *World Journal of Clinical Cases* (*WJCC*, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

INDEXING/ABSTRACTING

The *WJCC* is now abstracted and indexed in Science Citation Index Expanded (SCIE, also known as SciSearch®), Journal Citation Reports/Science Edition, Current Contents®/Clinical Medicine, PubMed, PubMed Central, Scopus, Reference Citation Analysis, China National Knowledge Infrastructure, China Science and Technology Journal Database, and Superstar Journals Database. The 2022 Edition of Journal Citation Reports® cites the 2021 impact factor (IF) for *WJCC* as 1.534; IF without journal self cites: 1.491; 5-year IF: 1.599; Journal Citation Indicator: 0.28; Ranking: 135 among 172 journals in medicine, general and internal; and Quartile category: Q4. The *WJCC*'s CiteScore for 2021 is 1.2 and Scopus CiteScore rank 2021: General Medicine is 443/826.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: *Ying-Yi Yuan*; **Production Department Director:** *Xu Guo*; **Editorial Office Director:** *Jin-Lei Wang*.

NAME OF JOURNAL
World Journal of Clinical Cases

ISSN
ISSN 2307-8960 (online)

LAUNCH DATE
April 16, 2013

FREQUENCY
Thrice Monthly

PUBLICATION DATE
October 26, 2022

World Journal of Clinical Cases

Submit a Manuscript: https://www.f6publishing.com

World J Clin Cases 2022 October 26; 10(30): 11004-11009

DOI: 10.12998/wjcc.v10.i30.11004

ISSN 2307-8960 (online)

CASE REPORT

Giant cutaneous squamous cell carcinoma of the popliteal fossa skin: A case report

Ke Wang, Zhen Li, Sheng-Wu Chao, Xiao-Wei Wu

Specialty type: Oncology

Provenance and peer review: Unsolicited article; Externally peer reviewed.

Peer-review model: Single blind

Peer-review report's scientific quality classification
Grade A (Excellent): A
Grade B (Very good): 0
Grade C (Good): C, C, C, C
Grade D (Fair): 0
Grade E (Poor): E

P-Reviewer: Aldiansyah D, Indonesia; Eccher A, Italy; Mijwil MM, Iraq; Ozden F, Turkey

Received: May 8, 2022
Peer-review started: May 8, 2022
First decision: July 12, 2022
Revised: July 31, 2022
Accepted: September 16, 2022
Article in press: September 16, 2022
Published online: October 26, 2022

Ke Wang, Department of Burn and Plastic Surgery, The Second Affiliated Hospital of Air Force Military Medical University, Xi'an 710032, Shaanxi Province, China

Zhen Li, Department of Liver, Yueyang Hospital of Integrated Traditional Chinese and Western Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai 201203, China

Sheng-Wu Chao, Xiao-Wei Wu, Department of Burns and Plastic Surgery, Affiliated Hospital of Qinghai University, Xining 810000, Qinghai Province, China

Corresponding author: Xiao-Wei Wu, Doctor, Associate Chief Physician, Department of Burns and Plastic Surgery, Affiliated Hospital of Qinghai University, No. 29 Tongren Road, Xining 810000, Qinghai Province, China. nmgwuxiaowei@163.com

Abstract

BACKGROUND

Cutaneous squamous cell carcinoma (cSCC) is a common malignant hyperplasia of the skin epithelium. However, cSCC progressing to giant squamous cell carcinoma of the popliteal fossa skin has not been reported. We used full-thickness skin graft from the lower left quadrant of the abdomen to reconstruct the popliteal fossa skin defect in our patient.

CASE SUMMARY

A 64-year-old woman presented with a 3-year history of a progressively enlarged integumentary tumor located on her left popliteal fossa, which was surgically treated. The resultant defect (15 cm × 25 cm) was repaired using full-thickness skin graft from the lower left quadrant of the abdomen.

CONCLUSION

Full-thickness skin graft is a good choice to repair popliteal fossa defect.

Key Words: Giant cutaneous squamous cell carcinoma; Popliteal fossa skin; Case report

Core Tip: We report an exceedingly rare case of giant cutaneous squamous cell carcinoma (maximum diameter > 5 cm), which presented as skin invasion of the popliteal fossa that was excised with optimal clinical result.

Citation: Wang K, Li Z, Chao SW, Wu XW. Giant cutaneous squamous cell carcinoma of the popliteal fossa skin: A case report. *World J Clin Cases* 2022; 10(30): 11004-11009
URL: https://www.wjgnet.com/2307-8960/full/v10/i30/11004.htm
DOI: https://dx.doi.org/10.12998/wjcc.v10.i30.11004

INTRODUCTION

Cutaneous squamous cell carcinoma (cSCC) is a non-melanoma skin and keratinocyte cancer, accounting for 20% of all skin cancers, and it is the second most common cancer worldwide[1]. Unfortunately, cSCC is not included in the national cancer registry in the United States, which makes it difficult for us to know the exact morbidity and mortality in China. European data show that the age-standardized incidence of cSCC is 9 to 96 cases per 100000 male residents and 5 to 68 cases per 100000 female residents (2002-2007 estimate)[2-4].

Although cSCC is mostly a benign tumor, it can locally infiltrate and metastasize. The 10-year survival rate of patients with cSCC is over 90%, but when metastasis occurs, the survival rate drops sharply[5]. The frequency of lymph node metastasis is about 4%, and the mortality is close to 2%. Because of the high incidence of cSCC, it has a significant impact on the overall mortality[6]. Furthermore, most cSCCs can be completely removed by surgery. cSCC of the popliteal fossa skin, which is a very rare site, is closely related to the knee joint and important neurovascular system, posing a surgical challenge for reconstruction. Herein, we report an exceedingly rare case of giant cSCC (maximum diameter > 5 cm), which presented as skin invasion of the popliteal fossa that was excised with optimal clinical result.

CASE PRESENTATION

Chief complaints

Three-year history of pain and mobility problems due to a progressively enlarged integumentary tumor located on the left popliteal fossa.

History of present illness

In June 2020, a 64-year-old woman presented with a 3-year history of pain and mobility problems due to a progressively enlarged integumentary tumor located on her left popliteal fossa.

History of past illness

This patient had no history of chronic diseases, such as hypertension, hyperuricemia, hyperlipidemia, and coronary heart disease.

Personal and family history

The patient was a non-smoker and had no family history of cSCC.

Physical examination

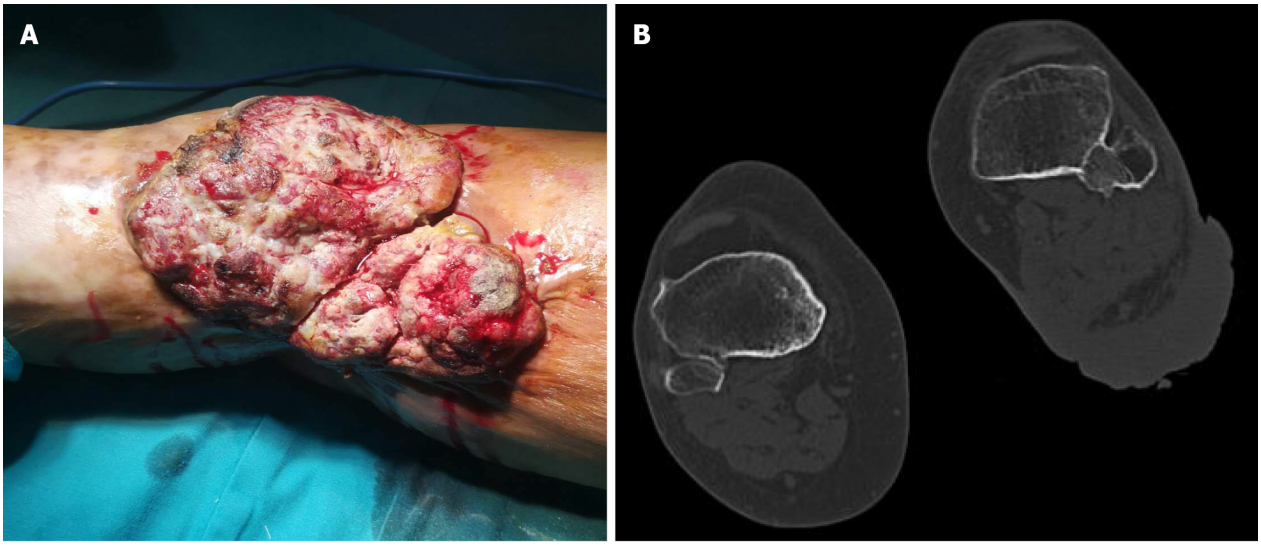
Physical examination showed an erythematous, nodular, protruding, ulcerative, mainly necrotic, foul smelling, cauliflower-like, firm skin tumor measuring 15 cm × 20 cm on the left popliteal fossa (Figure 1A). However, no significant lymph node or distant metastases were identified.

Laboratory examinations

The laboratory results revealed that the level of squamous cell carcinoma antigen was 20 ng/mL, the C-reactive protein level was 15.5 mg/L, and the erythrocyte sedimentation rate was 42 mm/h. Other laboratory results were within the normal range.

Imaging examinations

Computed tomography showed that the tumor had infiltrated deep into the muscular layer of the left popliteal fossa, but not the skeletal layer (Figure 1B).



DOI: 10.12998/wjcc.v10.i30.11004

Figure 1 Before the surgery. A: A huge erythematous nodular ulcerative skin tumor, measuring approximately 15 cm × 20 cm, was located on the left popliteal fossa; B: Computed tomography scan of the popliteal fossa.

FINAL DIAGNOSIS

Giant cSCC of the popliteal fossa skin.

TREATMENT

After popliteal fossa tumor excision and skin grafting, the tumor was totally excised. The tumor infiltrated the muscular layer and a 4 cm margin of muscular tissue was excised with the tumor. The final surgical defect measured 15 cm × 25 cm (Figure 2A and B). The surgical defect was repaired with a full-thickness skin graft from the lower left quadrant of the abdomen.

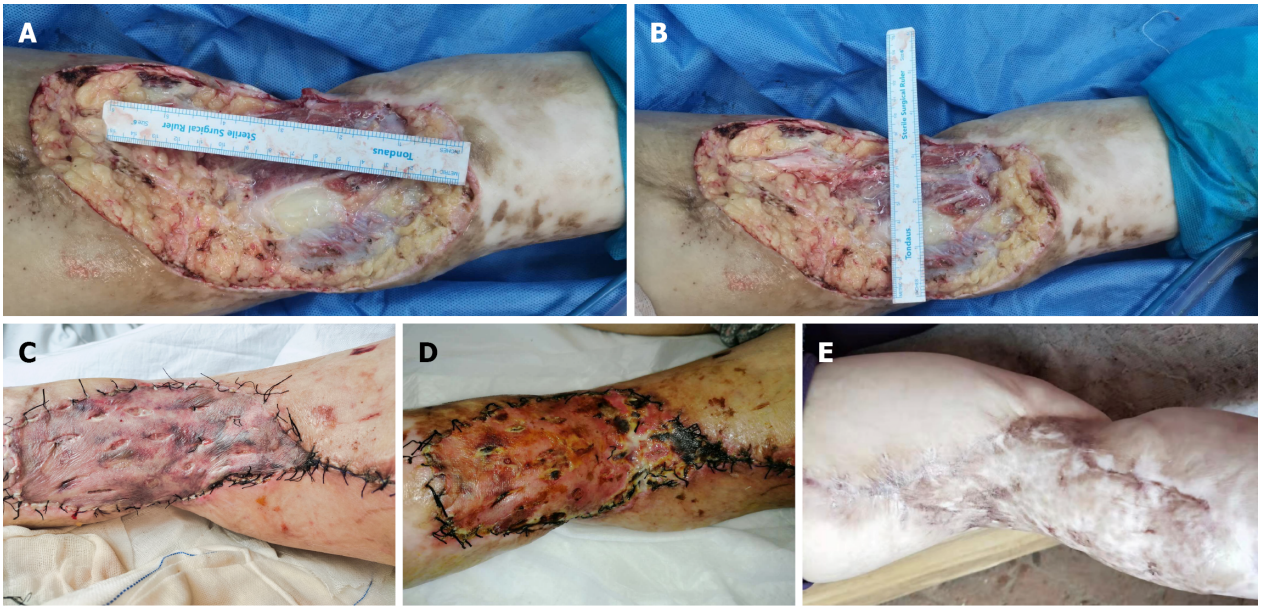
OUTCOME AND FOLLOW-UP

After surgery, the patient's condition significantly improved (Figure 2C and D). Hematoxylin and eosin-stained section of the surgical specimen revealed an invasive, infiltrative well-differentiated cSCC (Figure 3). The patient was discharged 1 mo after operation, and had no recurrence and good wound healing after surgery. The patient was followed for one year after surgery (Figure 2E), without recurrent symptoms.

DISCUSSION

Although most cSCC cases have a good prognosis after surgical resection[7], 3.7%-5.2% of patients have lymph node metastasis, and 1.5%-2.1% of patients die of cSCC[8]. Although these incidences are relatively low compared with those of many other malignant tumors, the absolute number of cSCC patients with lymph node metastasis is estimated to be 5604 to 12572 in the United States alone[9]. In addition, the estimated number of cSCC-related deaths per year is between 3932 and 8791, and its upper limit is close to the number of melanoma-related deaths per year. Thus, it is important to identify such aggressive cSCC cases in time, which can guide additional testing and treatment to improve the prognosis[7].

Old age, fair skin, long-term sun exposure, long-term immunosuppression, and previous skin cancer diagnosis are all important risk factors for cSCC[10]. In addition, long-term skin inflammation seems to contribute to the development of cSCC, such as chronic wound, ulcer, sinus tract, burn, or scar[11]. This patient developed cSCC mainly due to repeated skin ulceration, leading to local chronic inflammation and popliteal squamous cell carcinoma, which not only affects the functional recovery of knee joint but also increases the probability of malignant degeneration and the difficulty of popliteal defect reconstruction.



DOI: 10.12998/wjcc.v10.i30.11004

Figure 2 After extirpating the tumor, the final surgical defect on the left popliteal fossa measured 25 cm × 15 cm. A: The surgical defect in the left popliteal fossa was 25 cm long; B: The surgical defect in the left popliteal fossa was 15 cm wide; C: As seen on day 4 after reconstruction, the surgical defect on the left popliteal fossa was repaired by full-thickness skin grafting; D: Appearance of the full-thickness skin repair of the left popliteal fossa on day 15 after reconstruction; E: Appearance of the full-thickness skin repair of the left popliteal fossa at the 1-year follow-up.

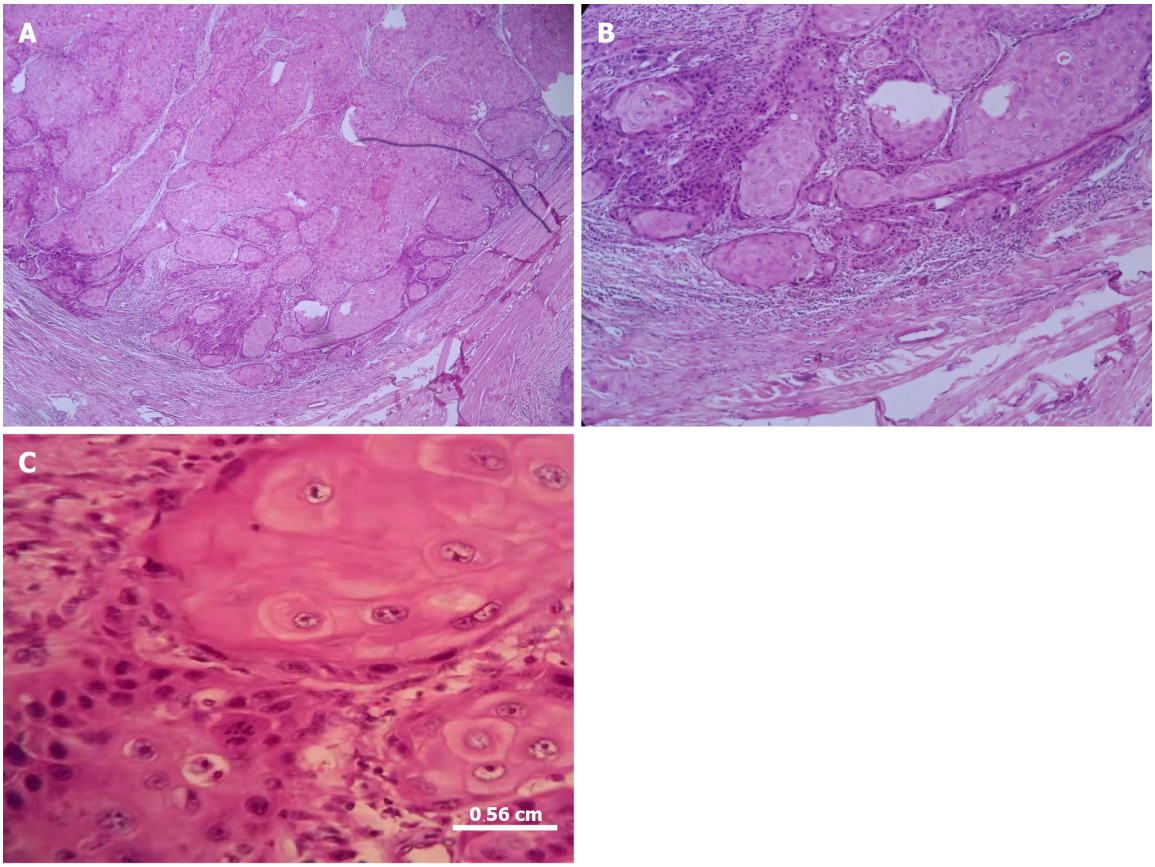
Besides Bowen disease, keratoacanthoma (KA), and invariant cSCC classic variant described above, the pathological tissues of cSCC also have several types, such as fibroproliferative, spindle cell, keratolytic, pseudovascular, verrucous, wedge-shaped epithelioma, adenosquamous cell and neurotrophic cSCC[12]. Disordered maturation of atypical keratinocytes, single cell keratinization, nuclear pleomorphism, atypical mitosis, and multi-nucleated tumor cells appear in all epidermal layers, but the basal layer remains unchangedI[13]. KA is a symmetrical keratinocyte hyperplasia with limited proliferation, and its central horn plug and epidermis extend to the tumor. Histologically, invasive cSCC is characterized by atypical and abnormal keratinocytes, hyperchromic and pleomorphic nuclei, and atypical mitotic cells. Well-differentiated cSCC usually has horny pearls and single cell keratinization, while poorly differentiated cSCC usually lacks keratinization, and has many atypical mitoses and mixed inflammatory infiltration.

Pathological examination showed numerous squamous cells with keratosis and mitotic infiltration [13]. Considering that it was invasive cSCC with keratosis and no lymph node metastasis was found in our case, we performed surgery for complete tumor resection and skin grafting, and advised the patient to undergo regular postoperative reexamination.

The resection of cSCC at the popliteal fossa involves joint movement and numerous blood vessels and nerves. Therefore, it is critical to protect the important neurovascular system and prevent secondary scar contraction based on extensive activities of the popliteal fossa, which may be manifested as external aesthetic distortion and popliteal fossa retraction, thus seriously damaging the shape and function[14]. We chose a full- thickness skin graft from the lower left quadrant of the abdomen to repair the popliteal fossa defect. Full-thickness skin graft can survive on fresh sterile wounds or infected granulation wounds due to its characteristics of thin skin and strong vitality[15]. Additionally, the donor area is scar-free and cannot be easily infected[16]. In the present case, the patient could perform normal daily activities, without severe postoperative pain or any complications. Therefore, full-thickness skin repair is suitable for patients with popliteal cSCC who need extensive tumor resection, with fewer complications and faster postoperative recovery.

CONCLUSION

Full-thickness skin graft is a good alternative for the repair of popliteal fossa defects.



DOI: 10.12998/wjcc.v10.i30.11004

Figure 3 Photomicrographs of the tumor. A: Scattered squamous cells with dyskeratosis and mitotic infiltrates (H&E staining, 40 × magnification); B: Numerous squamous cells with dyskeratosis and mitotic infiltrates (H&E staining, 100 × magnification); C: Squamous cells in the periphery of the tumor (H&E staining, 400 × magnification).

FOOTNOTES

Author contributions: Wang K and Li Z collected the clinical data and drafted the manuscript; Wu XW formulated the clinical treatment programs and guided the manuscript preparation; Chao SW participated in the clinical treatment; all authors read and approved the final manuscript.

Informed consent statement: Informed written consent was obtained from the patient for the publication of this report and any accompanying images.

Conflict-of-interest statement: The authors declare that they have no conflict of interest to disclose.

CARE Checklist (2016) statement: The authors have read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE Checklist (2016).

Country/Territory of origin: China

ORCID number: Ke Wang 0000-0002-4432-7334; Zhen Li 0000-0002-2940-6464; Sheng-Wu Chao 0000-0002-4612-2359; Xiao-Wei Wu 0000-0002-6405-8637.

S-Editor: Chen YL
L-Editor: Wang TQ
P-Editor: Chen YL

REFERENCES

1 **Means AD**, Leader NF, Siegel JA, Arron ST, Walker JL, Pomerantz H, Beatson M, Weinstock MA. Rate and Proportion of Malignant Skin Biopsies for Basal Cell and Squamous Cell Carcinoma on the Face and Ears After a Single Course of Topical 5-Fluorouracil: The Veterans Affairs Keratinocyte Carcinoma Chemoprevention Trial. *Dermatol Surg* 2021; **47**: 541-543 [PMID: 33795573 DOI: 10.1097/DSS.0000000000002437]

2 **Brewster DH**, Bhatti LA, Inglis JH, Nairn ER, Doherty VR. Recent trends in incidence of nonmelanoma skin cancers in the East of Scotland, 1992-2003. *Br J Dermatol* 2007; **156**: 1295-1300 [PMID: 17535229 DOI: 10.1111/J.1365-2133.2007.07892.X]

3 **Andersson EM**, Paoli J, Wastensson G. Incidence of cutaneous squamous cell carcinoma in coastal and inland areas of Western Sweden. *Cancer Epidemiol* 2011; **35**: e69-e74 [PMID: 21840282 DOI: 10.1016/j.canep.2011.05.006]

4 **Katalinic A**, Kunze U, Schäfer T. Epidemiology of cutaneous melanoma and non-melanoma skin cancer in Schleswig-Holstein, Germany: incidence, clinical subtypes, tumour stages and localization (epidemiology of skin cancer). *Br J Dermatol* 2003; **149**: 1200-1206 [PMID: 14674897 DOI: 10.1111/J.1365-2133.2003.05554.X]

5 **Varra V**, Woody NM, Reddy C, Joshi NP, Geiger J, Adelstein DJ, Burkey BB, Scharpf J, Prendes B, Lamarre ED, Lorenz R, Gastman B, Manyam BV, Koyfman SA. Suboptimal Outcomes in Cutaneous Squamous Cell Cancer of the Head and Neck with Nodal Metastases. *Anticancer Res* 2018; **38**: 5825-5830 [PMID: 30275206 DOI: 10.21873/anticanres.12923]

6 **Schmults CD**, Karia PS, Carter JB, Han J, Qureshi AA. Factors predictive of recurrence and death from cutaneous squamous cell carcinoma: a 10-year, single-institution cohort study. *JAMA Dermatol* 2013; **149**: 541-547 [PMID: 23677079 DOI: 10.1001/jamadermatol.2013.2139]

7 **Ferrarotto R**, Amit M, Nagarajan P, Rubin ML, Yuan Y, Bell D, El-Naggar AK, Johnson JM, Morrison WH, Rosenthal DI, Glisson BS, Johnson FM, Lu C, Mott FE, Esmaeli B, Diaz EM Jr, Gidley PW, Goepfert RP, Lewis CM, Weber RS, Wargo JA, Basu S, Duan F, Yadav SS, Sharma P, Allison JP, Myers JN, Gross ND. Pilot Phase II Trial of Neoadjuvant Immunotherapy in Locoregionally Advanced, Resectable Cutaneous Squamous Cell Carcinoma of the Head and Neck. *Clin Cancer Res* 2021; **27**: 4557-4565 [PMID: 34187851 DOI: 10.1158/1078-0432.CCR-21-0585]

8 **Kus KJB**, Ruiz ES. Non-Surgical Treatments for Keratinocyte Carcinomas. *Adv Ther* 2021; **38**: 5635-5648 [PMID: 34652721 DOI: 10.1007/s12325-021-01916-2]

9 **Rogers HW**, Weinstock MA, Feldman SR, Coldiron BM. Incidence Estimate of Nonmelanoma Skin Cancer (Keratinocyte Carcinomas) in the U.S. Population, 2012. *JAMA Dermatol* 2015; **151**: 1081-1086 [PMID: 25928283 DOI: 10.1001/jamadermatol.2015.1187]

10 **Knuutila JS**, Riihilä P, Karlsson A, Tukiainen M, Talve L, Nissinen L, Kähäri VM. Identification of metastatic primary cutaneous squamous cell carcinoma utilizing artificial intelligence analysis of whole slide images. *Sci Rep* 2022; **12**: 9876 [PMID: 35701439 DOI: 10.1038/s41598-022-13696-y]

11 **Zhang D**, Yang Y, Liu J, Zhu T, Huang H, Zhou C. Severe inflammation in new-borns induces long-term cognitive impairment by activation of IL-1β/KCC2 signaling during early development. *BMC Med* 2022; **20**: 235 [PMID: 35883093 DOI: 10.1186/s12916-022-02434-w]

12 **Fania L**, Didona D, Di Pietro FR, Verkhovskaia S, Morese R, Paolino G, Donati M, Ricci F, Coco V, Candi E, Abeni D, Dellambra E. Cutaneous Squamous Cell Carcinoma: From Pathophysiology to Novel Therapeutic Approaches. *Biomedicines* 2021; **9** [PMID: 33572373 DOI: 10.3390/biomedicines9020171]

13 **Paolino G**, Donati M, Didona D, Mercuri SR, Cantisani C. Histology of Non-Melanoma Skin Cancers: An Update. *Biomedicines* 2017; **5** [PMID: 29261131 DOI: 10.3390/biomedicines5040071]

14 **Lin SD**, Chang KP, Lu DK, Lee SS, Lin TM, Tsai CC, Lai CS. Endoscope-assisted management of varicose veins in the posterior thigh, popliteal fossa, and calf area. *Ann Plast Surg* 2002; **48**: 10-20 [PMID: 11773725 DOI: 10.1097/00000637-200201000-00002]

15 **Lin TS**, Jeng SF, Chiang YC. Resurfacing with full-thickness skin graft after debulking procedure for bulky flap of the hand. *J Trauma* 2008; **65**: 123-126 [PMID: 18580522 DOI: 10.1097/TA.0b013e31812f6c5b]

16 **Dessy LA**, Figus A, Fioramonti P, Mazzocchi M, Scuderi N. Reconstruction of anterior auricular conchal defect after malignancy excision: revolving-door flap *versus* full-thickness skin graft. *J Plast Reconstr Aesthet Surg* 2010; **63**: 746-752 [PMID: 19357009 DOI: 10.1016/j.bjps.2009.01.073]

Published by **Baishideng Publishing Group Inc**
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA
Telephone: +1-925-3991568
E-mail: bpgoffice@wjgnet.com
Help Desk: https://www.f6publishing.com/helpdesk
https://www.wjgnet.com