Pathkind Labs
from the promoters of Mankind

MEDICAL NEWS LETTER

BEYOND βETA

JAN-MAR 2023

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About Pathkind

Pathkind was started by the promoters of Mankind Pharma and Mr. Sanjeev Vashishta to provide superior quality diagnostics services accessible to the masses at affordable prices through innovative means. Company's National Reference Lab (NRL) in Gurugram is spread across 40,000 square feet and has state-of-the-art equipment from the most reputed equipment manufactures. Pathkind started it's operations on 11th August 2017 and company's 12 labs are accredited/certified across the globe by National Accreditation Board for Testing and Calibration Laboratories (NABL). In a short span of a little over 5 years, Pathkind has set up an impressive network of 88 labs (including 12 NABL Accredited / Certified Labs), 2500+ collection centres, about 5000 pickup points across 26 states, 375 districts and about 1000 cities / towns across India. It has six centres of excellence namely:

- Histopathology and IHC (Immunohistochemistry)
- Molecular Biology and NGS (Next Generation Sequencing)
- Genomics, Cytogenetics and FISH (Fluorescence in Situ Hybridization)
- HLA (Human Leukocyte Antigen) and Transplant Immunology
- Flow Cytometry
- Specialized Chemistry (LCMS / ICPMS)

The company's endeavor is to reach out with its superior quality diagnostics offerings to the masses across the length and breadth of the country including tier III / IV cities/ towns. Pathkind is one of the few companies in the diagnostics arena, where it has the capability to carry out all kind of Pathology tests including the routine biochemistry all the way upto high end tests performed on NGS, LC-MS/MS, Microarray etc., some of the tests which are being promoted by the company include:

- Newborn Screening Tests (NBS)
- Non Invasive Prenatal Screening (NIPS)
- Phadiatop for Allergy Screening
- Therapeutic drug monitoring with LCMS (Tacrolimus, Sirolimus, Everolimus, Cyclosporine) etc.

At Pathkind we have a very passionate and dedicated team of professionals including the doctors, scientists, technicians and other professionals who are highly skilled and experienced in their respective areas of expertise. The teams works very closely with all our prescribers and clinicians round the clock with an intent to help them with right diagnosis such that the worthy clinicians are able to decipher the right prognosis and start the right treatment for their patients.

In our newsletter – Beyond Beta we are going to showcase some of those rare cases which are seen first hand by our specialists. We hope and wish this will pave the way for a robust academic connect between our pathologists and our esteemed prescribers / clinicians and would help in creating a meaningful engagement platform to have an exchange of ideas.

From the Desk of our MD & CEO

In my career spanning 32 years I had the good fortune to work in various industries, both in new as well as old economy companies. My stint in healthcare including running hospitals and diagnostics businesses is over 17 years now and I feel blessed that given the dearth of resource in our sector, we can contribute significantly towards betterment of humankind.

In a country of our size and population, making superior quality healthcare/ diagnostics accessible to all, especially to the people with limited paying proclivity is an onerous task. No doubt our spend on healthcare as a percentage of GDP is abysmal and more public funding has to go into developing healthcare infrastructure and also into making efficient delivery of healthcare services available to the masses. The more I think about this, the more I conclude that we require a robust mechanism to carryout timely diagnosis which needless to mention, would result into improved prognosis, early treatment that would bring huge savings to the exchequer and also restrict loss of productivity. I firmly believe that novel / state-of-the-art technologies, new tests run on emerging next generation platforms could aid the doctors / prescribers a great deal to take informed decisions in terms of choosing the right treatment protocols and start the treatment at an early date. We, at Pathkind, steadfastly reach out to all our prescribers / doctors / customers through one on one interactions, round table meetings (RTMs), CMEs etc., to understand their need better and provide them with apt diagnostics solutions. The mere fact that we carry out over 30 RTMs / CMEs every month is testimony enough to showcase our seriousness about the cause. I am delighted to share with you that in our quest to further strengthen our knowledge sharing with all our worthy doctors, prescribers and healthcare champions, we are launching our quarterly Newsletter (Beyond Beta) where all our specialists / experts including molecular biologists, histopathologists, hematologists, cytogeneticists etc., would share their insights, learnings around rare & important cases with all our esteemed doctors / prescribers to augment their work. Further, we will endeavor to discuss some of these cases, face to face with various doctors as and when they evince the interest for such interactions.

We are indeed fortunate to be in the healthcare sector where we can contribute significantly towards alleviating the pain from the faces of all our patients who deserve to get superior quality and timely diagnosis / treatment.

I take this opportunity to thank you from the bottom of my heart for reposing trust in our reports and guiding us from time to time to do better. Here's wishing you and your family a very happy and healthy new year 2023.

With kind regards,

Sanjeev Vashishta

Extramammary Paget Disease of Scrotum

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BACKGROUND

Extramammary Paget disease (EMPD) is a rare malignancy involving mainly apocrine rich skin. It presents as a slowly growing painful red plaque, mimics an inflammatory pathology, leading delayed diagnosis. Diagnosis requires Histopathologic examination supported by Immunohistochemistry. Risk stratification must be done as well as thorough radiological examination to rule out underlying malignancy.

CASE REPORT

- **History:** A 77yr male presented with Erythematous plaque over scrotal region since 6 months.
- **Gross:** Received wide local excision measuring 11x6x2.5cm. Skin shows a firm erythematous plaque measuring 8.5x5x0.2cm. Closest soft tissue margin was inferior margin, 0.5cm away. Base was 1.5cm away from the growth. Representative sections were taken. Left superficial inguinal lymph node dissection also received.
- **Histology:** Sections examined show tumor involving basal layer of epidermis, involving apocrine gland as well. The tumor cells were seen singly, in clusters as well as glandular pattern. The cells were round to oval, had vesicular nuclei with prominent nucleoli and abundant pale cytoplasm. Focal areas of invasion were also noted (depth: 0.6cm). All the margins and base were free. Seven lymph nodes were present, free of tumour.

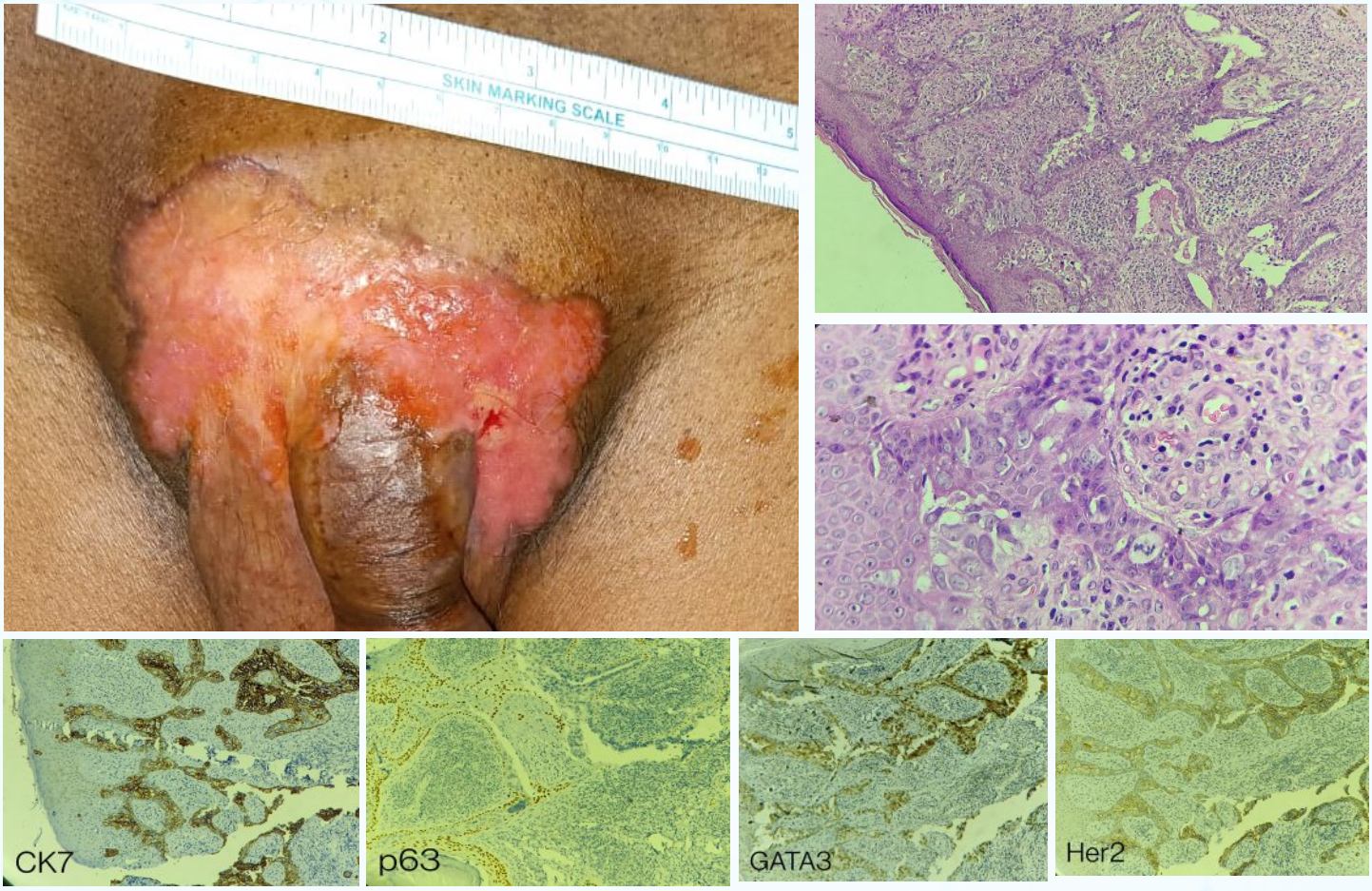
DISCUSSION

EMPD was first described by Crocker in 1889, reported lesions resembling mammary Paget on the scrotum and penis. Reported incidence: 0.1 to 2.4 patients per 1,000,000 person/year, 1:1 male-to-female ratio in Asian patients malignancy. In male EMPD, 11% cases have association with an underlying carcinoma of the genitourinary tract.

Surgery is the mainstay of treatment. Generally have a good prognosis with a 5 year overall survival rate of 75% to 95%.

3 major sites of involvement are female genitalia (65%), male genitalia (15%) and perianal area (20%). Other case reports of EMPD occurring on the eyelid, ear canal and umbilicus also reported. 7%-40% were associated with underlying malignancy.

Presents as a erythematous plaque on the genitals of patients aged 60 to 80 years; commonly misdiagnosed resulting significant delay in treatment.



IHC: Tumour cells showed strong positivity for CK7 while negative for p63. On further panel, positivity for GATA3 &Her2neu was present. On the basis of above Histomorphology and Immunoprofile, final diagnosis of Extramammary paget was made.

Histologically, 2 types of paget cells: classic type (Type A) have vesicular nuclei with prominent nucleoli and abundant pale cytoplasm; signet ring type (Type B) with eccentrically displaced nucleus with large cytoplasmic mucin droplets. Mostly primary intraepidermal neoplasm of glandular origin, (primary EMPD). Small subset called secondary EMPD, represents intraepithelial spread of malignant adenocarcinoma cells from an underlying internal malignancy.

CONCLUSION

EMPD, being rare and having a benign clinical presentation, suffers a delayed diagnosis. Thus, it is recommended that skin biopsies should be performed on patients with pruritic eczematous lesions of apocrine gland-bearing locations who fail to respond to 4 to 6 weeks of standard topical treatment and final diagnosis to be made on histopathological & immunohistochemical analysis. Work-up should include a focused evaluation for an associated internal malignancy.

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Chronic lymphocytic leukemia (CLL) in young adult

A case report

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BACKGROUND

CLL is the most common leukemia of adults in western countries. The median patient age at diagnosis of CLL is approximately 70 years, and is rarely seen in young adults. Most cases of CLL are diagnosed based on routine blood analysis in asymptomatic subjects. Less often, lymphadenopathy, splenomegaly, anaemia, or thrombocytopenia can lead to the diagnosis.

CASE REPORT

A 38-year-old man with no significant previous illnesses, & an unremarkable family history, presented with fatigue & increasing weakness. A complete blood count showed a high white blood cell count with thrombocytopenia. A provisional diagnosis of Acute Leukemia was made and peripheral blood sample was sent for immunophenotyping.

Peripheral smear morphology predominantly comprised of small, mature looking cells with clumped chromatin. Smudge cells were admixed. Based on morphology the sample was further processed for Chronic lymphoproliferative disorder panel. The sample was run on BC Navios 10 color flow-cytometer as per the standardized international protocol. FSC vs SSC was used to gate viable cells. CD45vs SSC gating strategy was used. Software used for analysis is Kaluza 2.1. Immunophenotyping revealed ~94% lambda restricted mature B cell population expressing CD19, CD5, dim CD20, CD200 and CD23.

These monotypic cells were negative for CD10, FMC-7, CD103, CD25, and CD11c. There were approximately 4% T cells and <1% natural killer cells. Based on immunophenotypic findings a final diagnosis of B-cell Chronic Lymphocytic Leukemia was given out.

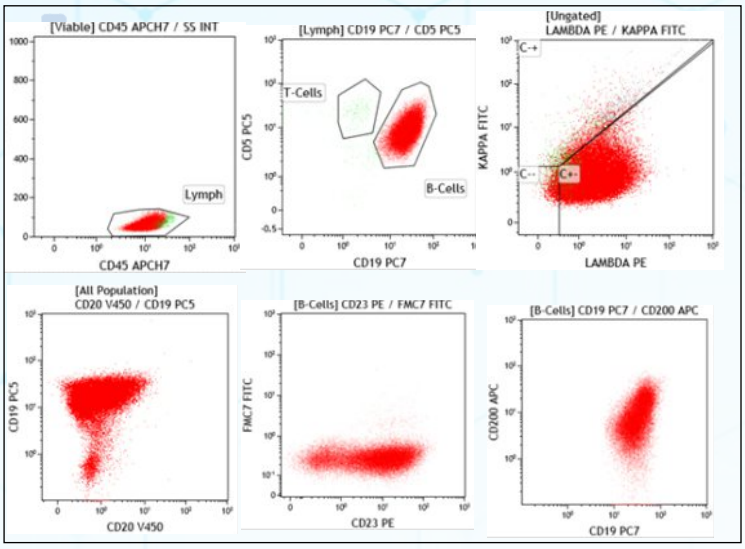

Fig 2,3,4,5,6&7: Lambda-restricted monoclonal population, expressing CD19, partial CD20, CD23 & CD200. First plot (CD45/SS) & second plot (CD19/CD5) show normal T cell population (green)

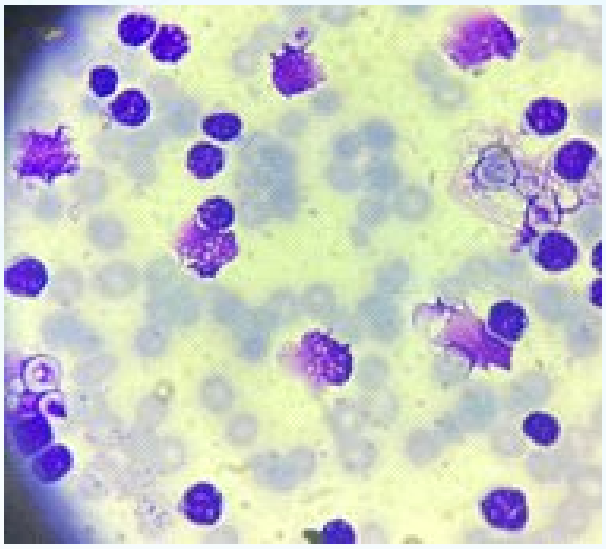

Figure 1: Peripheral blood smear showing small and round lymphoid cells with distinct clumped chromatin. Smudge cells also noted.

DISCUSSION

CLL is a lymphoproliferative neoplasm that requires the presence of ≥5×10^9/L B lymphocytes in peripheral blood, sustained for at least 3 months. The clonality of the B lymphocytes needs to be confirmed by demonstrating an immunoglobulin light chain restriction using flow cytometry (1). The main differential diagnosis for CLL is reactive lymphocytosis from infections or other types of lymphomas or leukemias. Clonality and persistence of lymphocytosis for >3 months help to differentiate CLL from other causes of lymphocytosis. Most patients with CLL are asymptomatic and are diagnosed during routine blood work showing absolute lymphocytosis, or during evaluation for enlarged lymph nodes (2). The median age of diagnosis of CLL is approximately 70 years, and only 0·85% of patients diagnosed with CLL between 2000 to 2017 were adolescent and young adults (between 15 and 39 years old), according to the National Cancer Institute's Surveillance and Epidemiology End Results (SEER) database (3).

Parikh et al reported the clinical and biological characteristics of the largest series of CLL patients ≤55 years old at diagnosis published so far and included for the first time and showed that patients ≤55 years with CLL frequently have high-risk disease resulting in significantly reduced overall survival compared to that of a sex- and age-matched population(4). However, more studies and good knowledge of the factors associated with disease evolution and outcome of such young patients is required in order to be able to provide these patients appropriate management.

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Acute Myeloid Leukemia in 12 year old boy

A less common age group for AML

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CASE REPORT

ABSTRACT

Although leukemia is the most common childhood cancer diagnosis, the subtype, acute myeloid leukemia (AML), is less common than acute lymphoblastic leukemia (ALL).

KEY WORDS

Acute Myeloid Leukemia (AML), Acute Lymphoblastic Leukemia (ALL), Complete Blood Count (CBC), Peripheral Blood Film (PBF).

INTRODUCTION

Leukemia is the most common of pediatric cancers accounting for about 30% of diagnosis[1]. AML is less common, accounting for approximately 18% of childhood leukemia diagnosis[2].

EPIDEMIOLOGY

The incidence of childhood AML in the United States was estimated at 7.7 cases per million children aged 0-14 [3] .Incidence peaks in infants less than one year of age declining for ages 5-9 years and increasing for children ages 10 to 14 years [3]. In a report using data from the Surveillance, Epidemiology, and End Results (SEER) Program, Asian and Pacific Islanders had the highest rate of childhood AML (8.4 per million), followed by Hispanics (8.1 per million), Caucasians (7.5), and African Americans (6.6) still lower than incidence of ALL [2].

SURVIVAL RATE

The five year survival rate for children <15 year age at the time of diagnosis was estimated to be 63.4% in the U.S.[3]

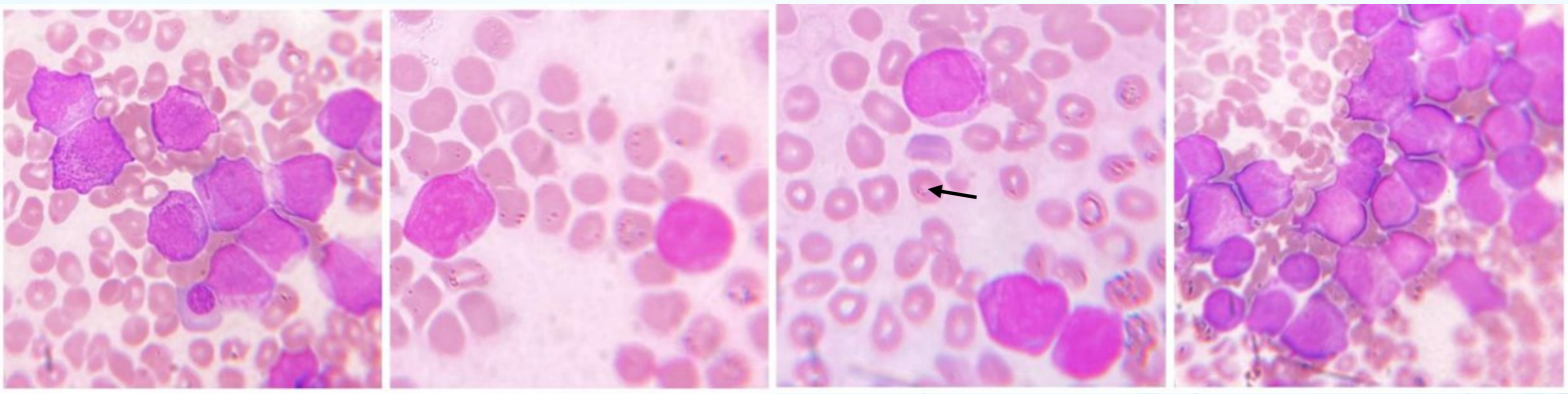

Figure showing marked Blacked arrows pointing blasts with Auer rods

CASE REPORT

12 year old boy presented to medicine OPD with gum bleed. All routine investigations were done. CBC showed TLC of 28000/mm^3, Hb-13g/dl, platelets 40,000/mm^3. PBF showed leucocytosis with about 97% blasts. These blasts were around 32-40 micron in size, with high N:C ratio, irregular nuclear membrane showing indentation/moulding at places resembling "buttock cells". Chromatin was open with 2-3 prominent nucleoli. Blasts had ample granular cytoplasm which showed presence of "AUER RODS" and "FAGGOTS". The rest of the myeloid series cells were markedly supressed. Few nRBC were noted and platelets were reduced. The patient was given a diagnosis of Acute Myeloid Leukemia and referred to higher centre.

DISCUSSION

Though Childhood AML are less common but specific morphological features can help in diagnosing and differentiating AML from ALL. Early detection and evaluating patient further for immunophenotyping & genetic abnormalities can help in deciding targeted therapies, understanding prognosis & further risk to first degree relatives thus empowering clinicians to do genetic counselling and preparedness for family.

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